



US Army Corps  
of Engineers®  
San Francisco District

Regulatory Branch  
333 Market Street  
San Francisco, CA 94105-2197

SAN FRANCISCO DISTRICT

# PUBLIC NOTICE

Project: Oakland Waterfront Trail Bridge Crossings, Alameda County

NUMBER: 30115S

DATE: August 14, 2006

RESPONSE REQUIRED BY: Sept. 22, 2006

PERMIT MANAGER: Tyson Eckerle

PHONE: 415-977-8462

Email: Tyson.S.Eckerle@usace.army.mil

## 1. INTRODUCTION:

**Subject:** The U.S. Army Corps of Engineers, San Francisco District, is evaluating a permit application to construct three Bay Trail bridge under-crossings on the Oakland side of the Oakland Inner Harbor Tidal Canal (OIHTC), in the City of Oakland, Alameda County, California (37° 46'16"; 122° 13'47") (See Figure 1). The crossings would occur beneath the Park Street, Fruitvale Avenue, and High Street bridges.

**Authority:** This application is being processed pursuant to the provisions of Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).

**Applicant:** Claudia Cappio,  
Development Director  
City of Oakland  
250 Frank H. Ogawa Plaza, 3<sup>rd</sup> Floor  
Oakland, CA 94612

## 2. PROPOSED PROJECT:

**Project Background and Context:** The San Francisco Bay Trail project seeks to complete a 500 mile network of continuous bike and hiking paths around the San Francisco Bay. To date, approximately half of the Bay Trail has been completed. This project is being pursued to tie into the existing Oakland waterfront Bay Trail, which stops northwest of the Park Street Bridge and southeast of the High Street Bridge. The new trail section would run from Jack London Square to the

Martin Luther King Regional Shoreline Park. The project would increase public access to the Oakland side of the OIHTC. One of the greatest challenges in constructing the subject section of the Bay Trail is to design and provide a safe crossing around or across the Park Street, Fruitvale Avenue, and High Street bridges.

**Project Description:** The City of Oakland proposes to construct three fixed pier structures beneath the Park Street, Fruitvale Avenue, and High Street Bridges in effort to provide an uninterrupted Bay Trail section with safe thruway crossing. These structures would require the installation of approximately 320 18 to 24-inch square concrete piles (approximately 100 piles for the Park Street under-crossing, 140 piles for the Fruitvale Avenue under-crossing, and 80 piles for the High Street under-crossing). Please refer to the attached September 2005 "Oakland Waterfront Trail Bridge Crossings," Sheets G1 and C1 through C26, for an illustration of trail placement and pile location. These drawings focus on the bridge crossings; the remainder of the new trail would be constructed on the uplands adjacent to the OIHTC.

**Alternatives Considered:** In addition to the bridge under-crossing design, the City of Oakland considered three alternatives to facilitate a continuous trail: placing the entire trail on upland areas by crossing Park Street, Fruitvale Avenue and High Street at-grade; creating above grade bridges to cross over Park Street, Fruitvale Avenue and High Street; and tunneling below the subject streets. The at-grade

crossings would require a signalized pedestrian/bicycle crossing, which would create crossing safety concerns, and would significantly disrupt the flow of traffic through three congested thoroughways. The above grade bridges would require a significant, unavailable, amount of property to meet the allowable gradient in order to meet American Disabilities Act (ADA) requirements and provide for minimum vehicle height clearances. The tunneling alternative would generate high construction and operation costs which would render the project infeasible, and visual access to the trail would be impeded.

Both the above grade and tunnel options were eliminated after early planning stage consideration for the reasons mentioned above. The at-grade crossings would disrupt the flow of traffic through three busy avenues: on average, approximately 30,000 vehicles per day travel on Park Street, Fruitvale hosts approximately 17,000 vehicles daily, and High Street averages 26,000 vehicles per day. The additional challenges and constraints associated with each at-grade crossing are addressed below:

**Park Street Bridge:** The City considered two avenues for an upland crossing over Park Street (29<sup>th</sup> Avenue): an at-grade crossing adjacent to the OIHTC and a crossing one or more blocks inland from the waterfront/shoreline. An at-grade crossing would require ramping up the trail 5 to 8 feet above the top of the bank to meet the bridge elevation. At a minimum, this would require a 100-160 foot long ramp on each side of the bridge, which would result in a significant property take, cost expenditure to the City, and a visually obtrusive design.

An inland crossing would reduce the cost factor associated with ramping up at the shoreline, but it would exacerbate the street crossing impacts: this would require pedestrians and bicyclists to cross multiple streets (29<sup>th</sup> and 23<sup>rd</sup> Avenues), creating additional safety concerns. Trail users would be subject to more time on or adjacent to the congested Park Street/29<sup>th</sup> Avenue traffic corridor without any connection to the bay waterfront.

**Fruitvale Avenue Bridge:** At Fruitvale Avenue, the bay trail would need to cross two bridges: the Fruitvale car bridge and the Fruitvale railroad bridge. An at-grade crossing is not feasible at this location, as the ramp or other trail alignment would have to fit in between existing rail lines and roadway, which would encroach into the railroad right of way and would pose a significant safety risk. In addition, the California Public Utilities Commission would not likely allow an at-grade crossing for fear of disrupting potential future plans: the City of Alameda hopes to someday provide light rail service from Alameda to the Fruitvale BART station utilizing this corridor.

**High Street Bridge:** Just like the other crossings, a crossing close to the shoreline would require the city to raise the Bay Trail to meet the High Street Bridge elevation. A second, cheaper alternative would create a detour away from the waterfront/shoreline and cross one or more blocks inland. This option reduces the cost factors associated with ramping up at shoreline, but it exacerbates the street crossing impacts, and adds potential safety concerns for the pedestrians and bicyclists utilizing the trail.

**Purpose and Need:** The basic Project purpose is two-fold: 1) to provide easily accessible continuous public access to the Bay Shoreline by tying into the existing Bay Trail system and 2) to encourage safe public use and enjoyment of the OIHTC shoreline.

**Impacts:** The proposed project would place three pile supported structures into the OIHTC. Construction of the under bridge crossing would create both temporal and permanent impacts:

*Temporal Impacts:* Approximately 320 piles would be driven into the OIHTC using a vibratory or impact pile driving hammer. Impact pile driving generates sounds that may negatively impact resident or transient fish species. However, these impacts can be mitigated for using best management practices for pile driving.

*Permanent Impacts:* Three permanent structures

would be placed into the estuary, which would reduce the size of channel available to boating. However, it should be noted that these structures would be located safely away from the main shipping channel; they are not expected to alter the through flow of vessel traffic.

The below table shows the current operable channel width at each of the bridges and how much the operable channel would be impacted by the proposed structures. It also shows the number of vessels that crossed below each bridge in 2005. According to Alameda County, these numbers are higher than they have been in previous years, as a company located on the OIHTC is supplying the Bay Bridge project with materials:

	Park Street Bridge	Fruitvale Bridges	High Street Bridge
<b>2005 Vessel Traffic</b>	1267 vsls	1147 vsls	1010 vsls
<b>Existing Operable Channel Width</b>	240 ft	200 ft*	200 ft
<b>Width of Proposed Structure</b>	30 ft	44 ft	30 ft
<b>Proposed Remaining Channel Width</b>	210 ft	156 ft	170 ft

*\*the Fruitvale Drawbridge constricts the operable channel area to approximately 100 feet; the proposed project would not impact vessel traffic below the Fruitvale Bridges*

Please refer to the attached Figures A, B, and C for drawings of the OIHTC channel with the proposed structures at each bridge location.

**Human Factor:** As stated above, this project is being pursued to provide safe, welcoming public access to the OIHTC shoreline. The proposed alternative has been designed to keep users away from traffic and allow uninterrupted through flow of bike and pedestrian traffic. This, in addition to the intimate connection to the OIHTC waterway, may likely encourage greater public use of the Bay Trail than if the crossings were constructed in the uplands and users were required to traverse three busy streets.

**Similar Projects:** For reference, the Willamette River, in Portland, Oregon, hosts a larger scale version of this project: a bike/pedestrian trail runs underneath the Burnside Bridge on the east side of the river.

### 3. COMPLIANCE WITH FEDERAL LAWS:

**National Environmental Policy Act of 1969 (NEPA):** The Corps will prepare an environmental assessment to assess the environmental impacts of the proposed action in accordance with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. Section 4371 et seq); the Council on Environmental Quality's Regulations, 40 C.F.R. Parts 1500-1508; and Corps' Regulations, 33 C.F.R. Parts 230 and 325 Appendix B. Unless otherwise stated, the Environmental Assessment will describe only the impacts (direct, indirect, and cumulative) resulting from activities that occur within the Corps' jurisdiction. The documents used in the preparation of the Environmental Assessment will be on file with the U.S. Army Corps of Engineers, San Francisco District, Regulatory Branch, 333 Market Street, San Francisco, California 94105-2197.

**Endangered Species Act of 1973 (ESA):** Section 7 of the Endangered Species Act requires formal consultation with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) if a Corps permitted project may adversely affect any Federally listed threatened or endangered species or its designated critical habitat. The Corps has made a preliminary determination that the proposed project may affect, but is not likely to adversely affect the Central California Coast (CCC) steelhead ESU (*Oncorhynchus mykiss*) and the green sturgeon (*Acipenser medirostris*). This determination was based on information regarding habitat requirements of federally listed threatened and endangered species that could occur on the project site.

In accordance with Section 7(a)(4) of the Endangered Species Act the Corps will initiate an informal consultation with the NMFS for potential adverse affects to CCC steelhead and green sturgeon.

**Magnuson-Stevens Fisheries Conservation and Management Act:** NMFS and several interagency fisheries councils have designated specific water bodies as Essential Fish Habitat (EFH) in accordance

with the Magnuson-Stevens Fisheries Conservation and Management Act. Coordination with the NMFS in regard to EFH will be initiated concurrently with the ESA consultation.

#### **Clean Water Act of 1972 (CWA):**

**a. Water Quality:** A State water quality certification may be required for this activity under Section 401 of the Clean Water Act (33 U.S.C. Section 1341). The applicant has been advised that they need to contact the San Francisco Bay Regional Water Quality Control Board to determine whether or not a certification will be required. If required, no Corps permit will be granted until the applicant obtains the required water quality certification. The Corps may assume a waiver of water quality certification if the State fails or refuses to act on a valid request for certification within 60 days after the receipt of a valid request, unless the District Engineer determines a shorter or longer period is reasonable for the State to act.

Parties concerned with any water quality issues that may be associated with this project should write to the Executive Officer, California Regional Water Quality Control Board, San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California 94612, by the close of the comment period of this Public Notice.

**Coastal Zone Management Act of 1972 (CZMA):** Section 307 of the Coastal Zone Management Act requires the applicant to certify that the proposed project will comply with the State's Coastal Zone Management Program, if applicable. No Corps permit will be issued until the State has concurred with the applicant's certification. Coastal development issues should be directed to the San Francisco Bay Conservation and Development Commission (BCDC), 50 California Street, Suite 2600, San Francisco, California 94111.

**National Historic Preservation Act of 1966 (NHPA):** On the basis of a review of survey data on file with various local, state and federal agencies, potential historic or archeological resources may occur in the project vicinity. These resources may

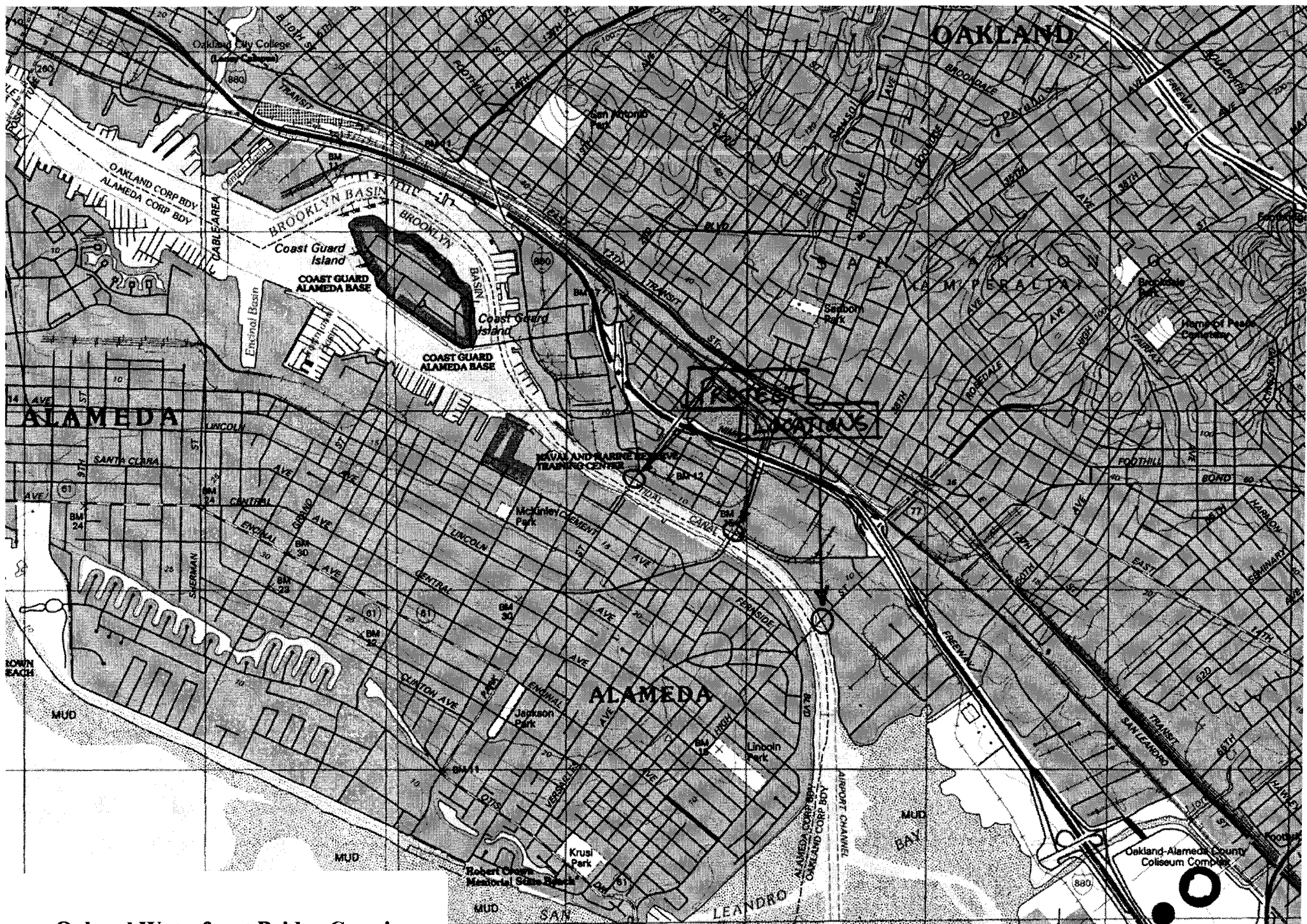
potentially be impacted by the construction of the Bay Trail. The Corps is currently working with the State Historic Preservation Office (SHPO) to determine whether or not these resources are eligible for listing on the National Register of Historic Places. If so, the Corps and SHPO will coordinate to determine the appropriate actions to take. In addition, if unrecorded resources are discovered during construction of the project, operations will be suspended until the Corps completes consultation with the State Historic Preservation Office (SHPO) in accordance with Section 106 of the National Historic Preservation Act.

**4. PUBLIC INTEREST EVALUATION:** The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed Project on the public interest. That decision will reflect the national concern for protection and utilization of important resources. The benefits that reasonably may be expected to accrue from the proposed Project must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered, including its cumulative impacts. Among those factors are: conservation, economics, aesthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people.

**5. CONSIDERATION OF COMMENTS:** The Corps of Engineers is soliciting comments from the public, federal, state and local agencies and officials, Indian Tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps in determining whether to issue, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments

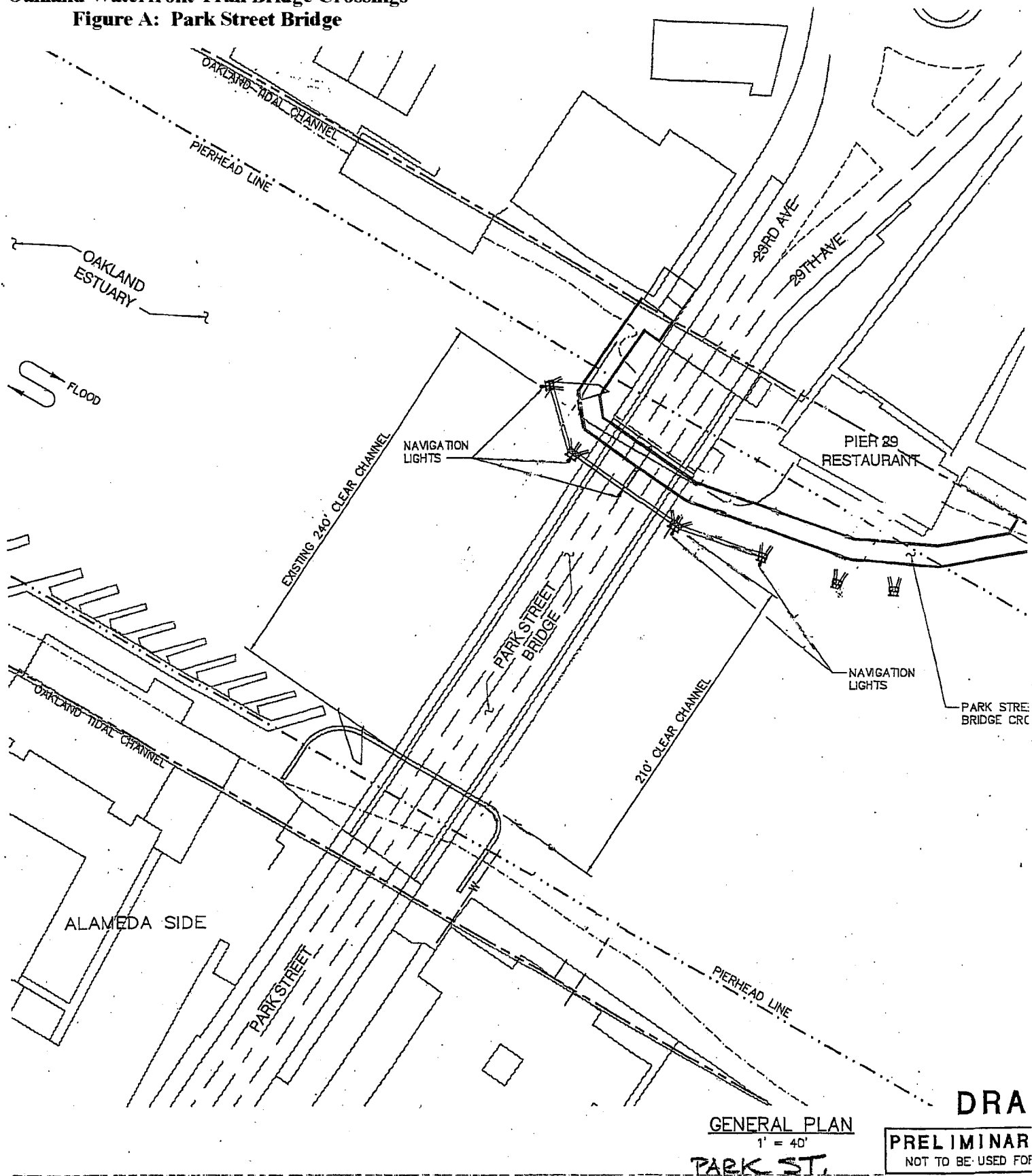
are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest in the proposed activity.

**6. SUBMITTAL OF COMMENTS:** Interested parties may submit, in writing, any comments concerning this activity. Comments should include the applicant's name and the number and date of this Public Notice, and should be forwarded so as to reach this office within the comment period specified on Page 1. Comments should be sent to the **U.S. Army Corps of Engineers, San Francisco District, Regulatory Branch, 333 Market Street, San Francisco, California 94105-2197 with reference to file #30115S.** It is the Corps' policy to forward any such comments that include objections to the applicant for resolution or rebuttal. Any person may also request in writing within the comment period of this Public Notice that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing. Additional details may be obtained by contacting the applicant whose name and address are indicated in the first paragraph of this Public Notice or by contacting Tyson Eckerle of our office at telephone 415-977-8462 or E-mail: [Tyson.S.Eckerle@usace.army.mil](mailto:Tyson.S.Eckerle@usace.army.mil). Details on any changes of a minor nature that are made in the final permit action will be provided upon request.



**Oakland Waterfront Bridge Crossings**  
**Figure 1: Vicinity Map**

**Oakland Waterfront Trail Bridge Crossings**  
**Figure A: Park Street Bridge**



**DRA**

**PRELIMINAR**  
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BY	DATE



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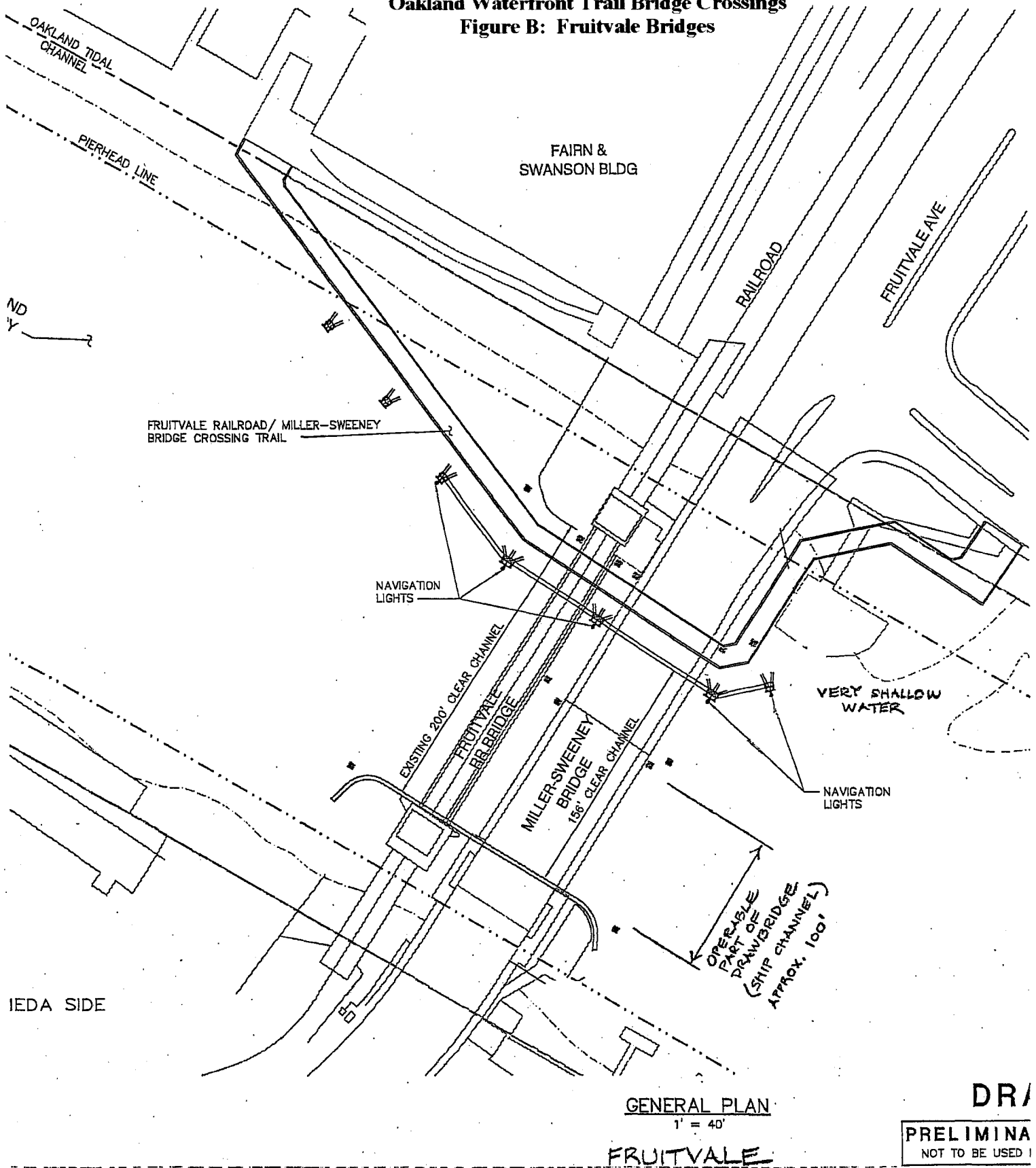
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 Walnut C  
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# Oakland Waterfront Trail Bridge Crossings Figure B: Fruitvale Bridges



DR/

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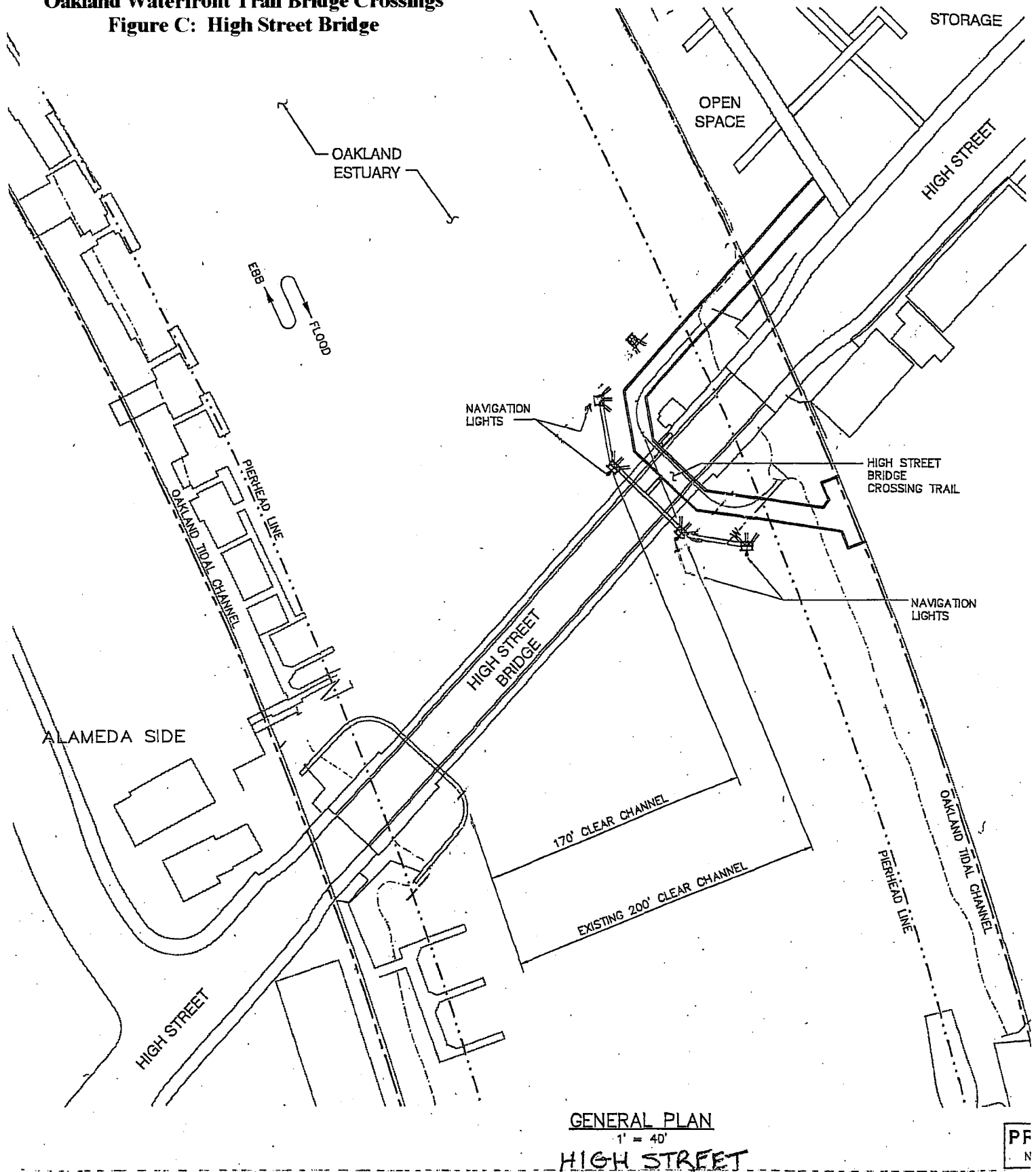
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2001  
Walnut

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# Oakland Waterfront Trail Bridge Crossings Figure C: High Street Bridge



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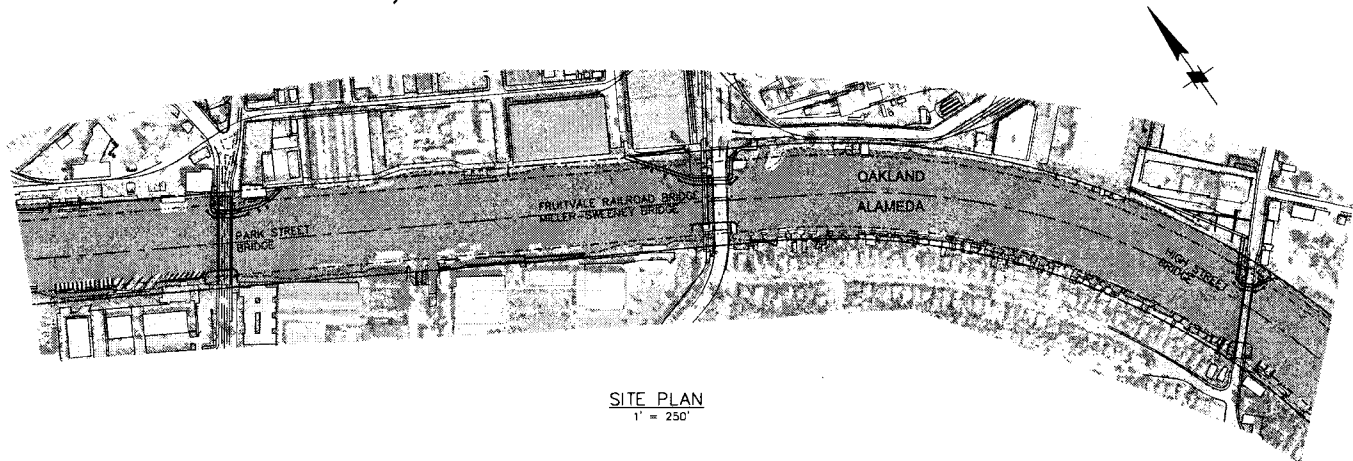
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JOB NO. 5465

# OAKLAND WATERFRONT TRAIL

## BRIDGE CROSSINGS

### OAKLAND, CALIFORNIA

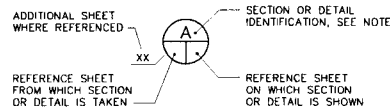
INDEX OF DRAWINGS		
SHEET NUMBER	DRAWING NUMBER	TITLE
1	G1	TITLE SHEET, INDEX OF DRAWINGS, LEGEND & SYMBOLS, ABBREVIATIONS, SITE PLAN
2	C1	PARK STREET BRIDGE CROSSING, GENERAL PLAN
3	C2	PARK STREET BRIDGE CROSSING, TRAIL PLAN
4	C3	PARK STREET BRIDGE CROSSING, ELEVATIONS
5	C4	PARK STREET BRIDGE CROSSING, SECTIONS AND DETAILS
6	C5	PARK STREET BRIDGE CROSSING, FENDER SYSTEM DETAIL, SHEET 1
7	C6	PARK STREET BRIDGE CROSSING, FENDER SYSTEM DETAIL, SHEET 2
8	C11	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY BRIDGE CROSSING, GENERAL PLAN
9	C12	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY BRIDGE CROSSING, TRAIL PLAN
10	C13	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY BRIDGE CROSSING, ELEVATIONS
11	C14	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY BRIDGE CROSSING, SECTIONS AND DETAILS
12	C15	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY FENDER SYSTEM DETAIL, SHEET 1
13	C16	FRUITVALE RAILROAD BRIDGE/ MILLER-SWEENEY FENDER SYSTEM DETAIL, SHEET 2
14	C21	HIGH STREET BRIDGE CROSSING, GENERAL PLAN
15	C22	HIGH STREET BRIDGE CROSSING, TRAIL PLAN
16	C23	HIGH STREET BRIDGE CROSSING, ELEVATIONS
17	C24	HIGH STREET BRIDGE CROSSING, SECTIONS AND DETAILS
18	C25	HIGH STREET BRIDGE CROSSING, FENDER SYSTEM DETAIL, SHEET 1
19	C26	HIGH STREET BRIDGE CROSSING, FENDER SYSTEM DETAIL, SHEET 2



SITE PLAN

1" = 250'

#### CROSS-REFERENCE LEGEND



NOTE: LETTER INDICATES SECTION, NUMBER INDICATES DETAIL. WHERE THERE IS NO REFERENCE SHEET INDICATED, IT MEANS THE DETAIL OR SECTION IS TAKEN AND SHOWN ON THE SAME SHEET.

#### LEGEND & SYMBOLS

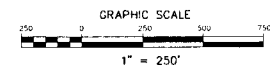
—	PROJECT FEATURE
---	EXISTING FEATURE
---	PIERHEAD LINE
---	CHANNEL LINE
---	GAS LINE
---	WATER LINE
---	ELECTRICAL CABLE
---	SUBMARINE CABLE

#### ABBREVIATIONS

APP	APPROXIMATE
C	CENTERLINE
CONC	CONCRETE
(E), EXIST	EXISTING
HOWL	HIGHEST OBSERVED WATER LEVEL
LOWL	LOWEST OBSERVED WATER LEVEL
MLLW	MEAN LOWER LOW WATER
MHHW	MEAN HIGHER HIGH WATER
M-S	MILLER-SWEENEY
ODD	OAKLAND CITY DATUM
RR	RAILROAD

#### NOTE:

VERTICAL DATUM IS BASED ON OAKLAND CITY DATUM (ODD).



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(925) 944-5411

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JOB NO.	5465	SUBMITTED BY		TITLE	

OAKLAND WATERFRONT TRAIL

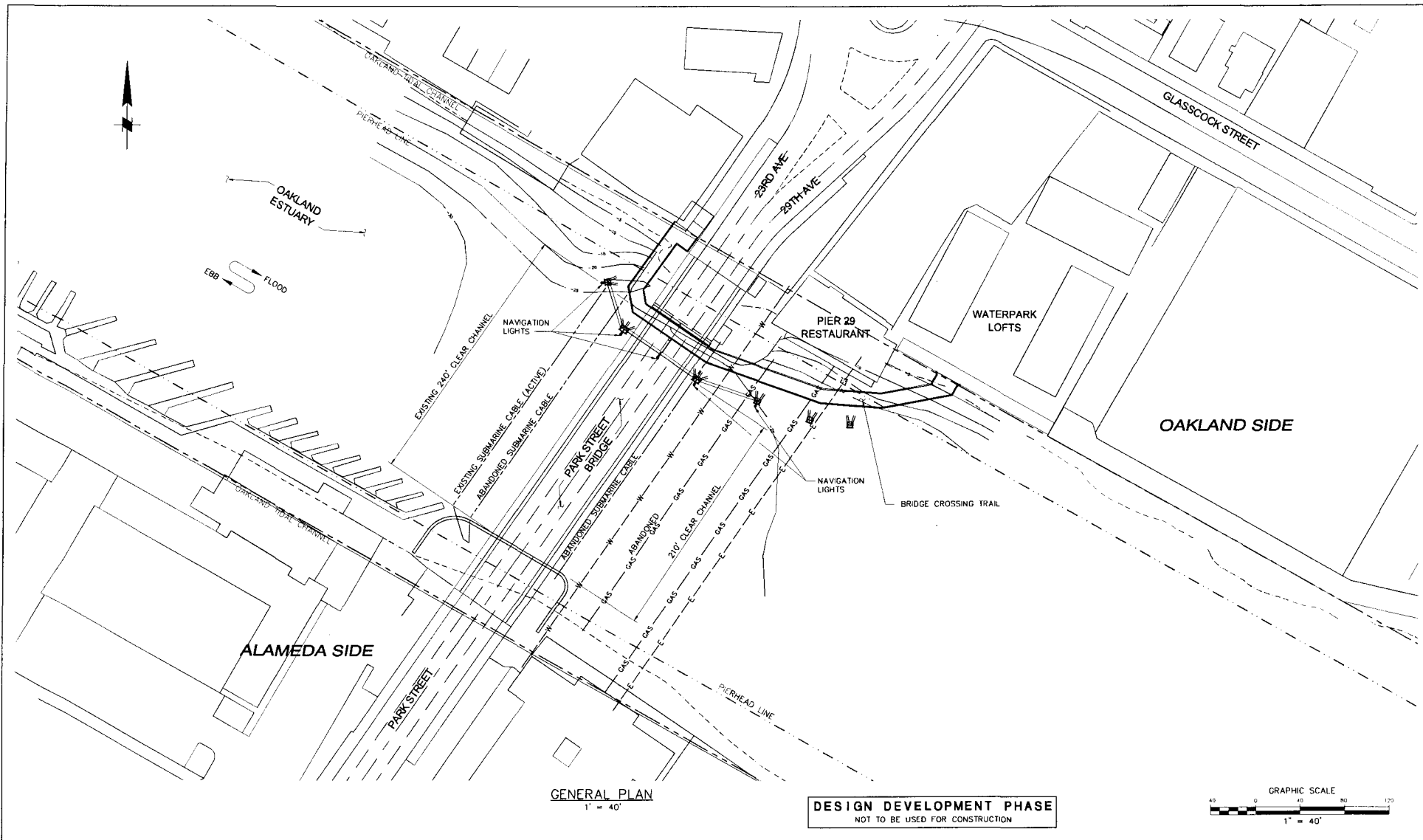
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 1 OF 19

TITLE SHEET, INDEX OF DRAWINGS,  
LEGEND & SYMBOLS, ABBREVIATIONS,  
SITE PLAN

G1



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JOB NO.	5465	SUBMITTED BY	TITLE		

OAKLAND WATERFRONT TRAIL

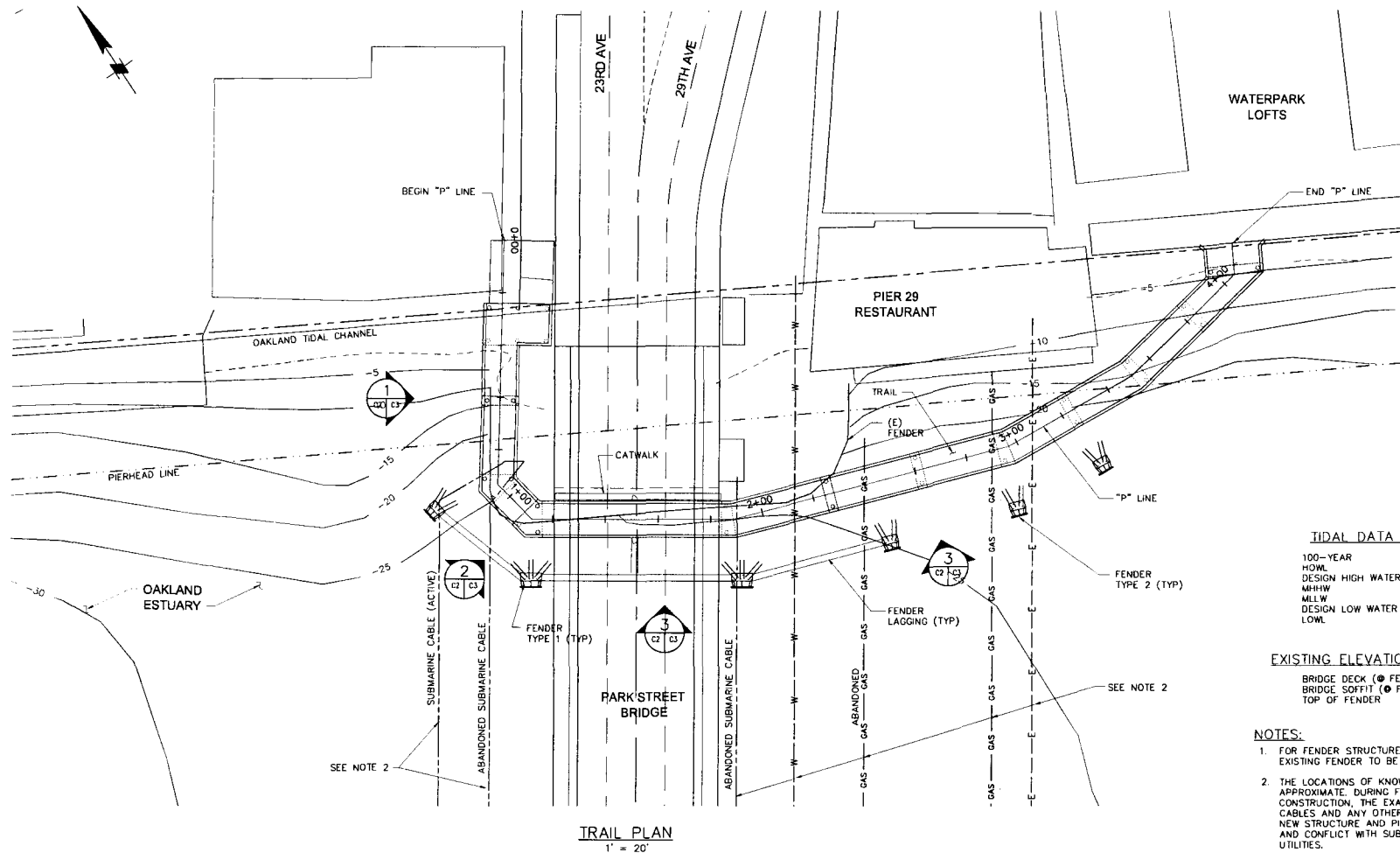
DATE Sept. 2005

BRIDGE CROSSINGS

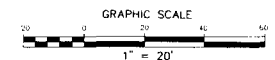
SHEET 2 OF 19

PARK STREET BRIDGE CROSSING  
GENERAL PLAN

C1



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OAKLAND WATERFRONT TRAIL

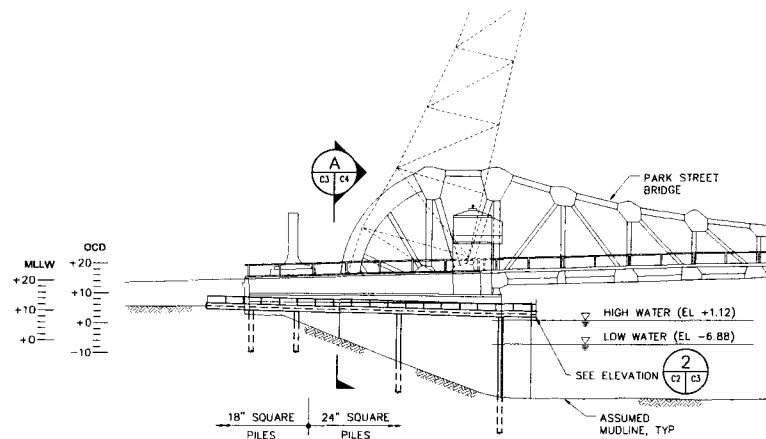
BRIDGE CROSSINGS

PARK STREET BRIDGE CROSSING  
TRAIL PLAN

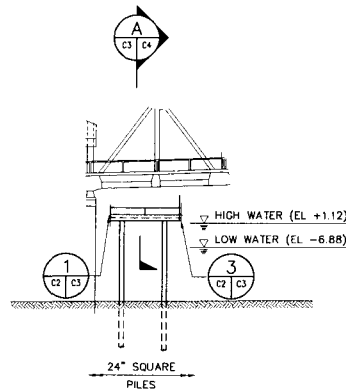
DATE Sept. 2005

SHEET 3 OF 19

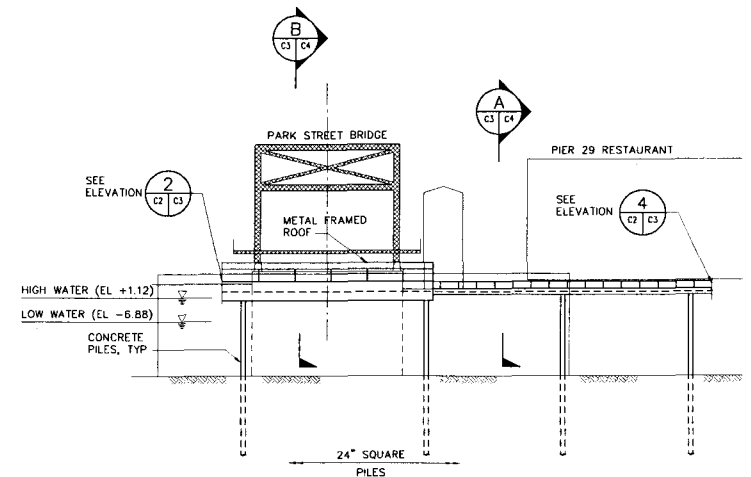
C2



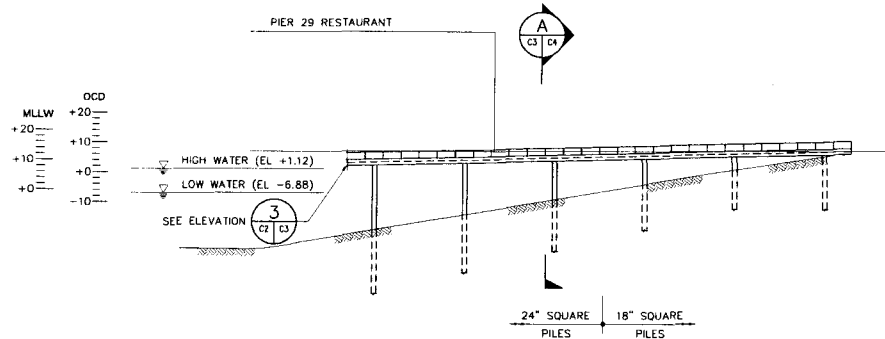
ELEVATION 1  
1" = 20'



ELEVATION 2  
1" = 20'



ELEVATION 3  
1" = 20'



ELEVATION 4  
1" = 20'

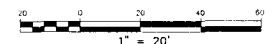
PILE SIZE	ESTIMATED PILE EMBEDMENT DEPTH BELOW MUDLINE
18" SQ.	30 FT
24" SQ.	40 FT

NOTE:  
FENDER SYSTEM NOT SHOWN FOR CLARITY.

#### TIDAL DATA (OCD)

100-YEAR	+3.62
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MRHW	+0.56
MLLW	-5.88
DESIGN LOW WATER	-6.88
LOWL	-7.95

DESIGN DEVELOPMENT PHASE  
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JOB NO.	SUBMITTED BY	TITLE
5465		

OAKLAND WATERFRONT TRAIL

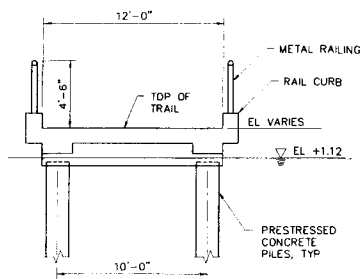
BRIDGE CROSSINGS

PARK STREET BRIDGE CROSSING  
ELEVATIONS

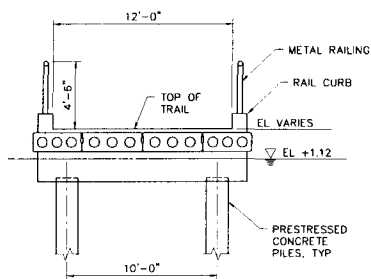
DATE Sept. 2005

SHEET 4 OF 19

C3



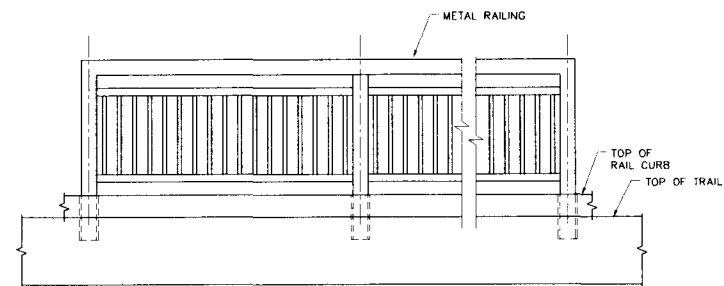
CAST IN PLACE BEAMS  
ALTERNATIVE 1



VOIDED SLAB  
ALTERNATIVE 2

TYPICAL SECTION OPEN AREA

1/4" = 1'-0"

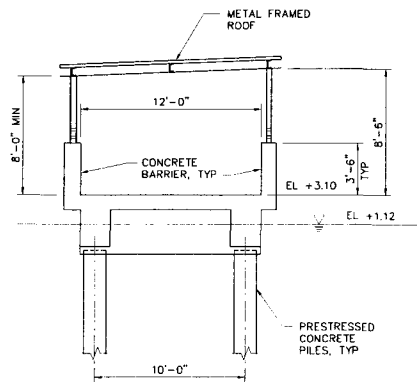


TYPICAL RAILING ELEVATION (OPEN AREA)

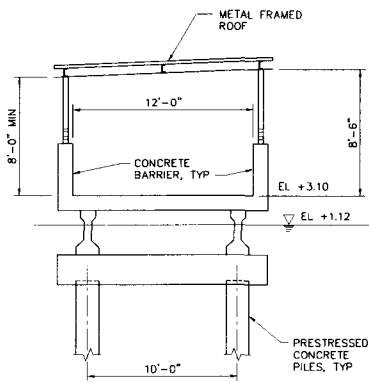
3/4" = 1'-0"

**NOTE:**

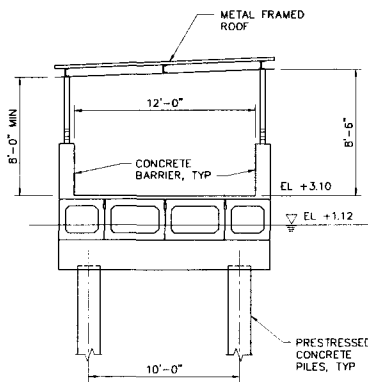
THE FINAL DESIGN SHALL DETERMINE WHICH OF THE ALTERNATIVES SHOWN HERE WILL BE SELECTED FOR THE TRAIL SUPERSTRUCTURE.



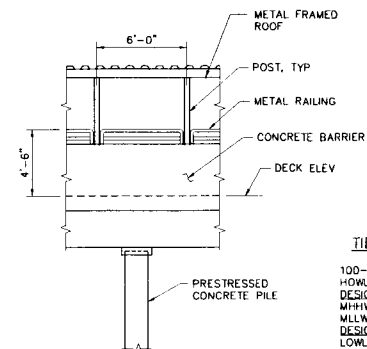
CAST IN PLACE BEAMS  
ALTERNATIVE 1



AASHTO TYPE II, PRECAST T-BEAMS  
ALTERNATIVE 2



AASHTO PRECAST BOX-BEAMS  
ALTERNATIVE 3



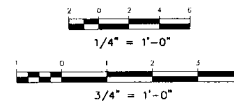
ELEVATION  
(UNDER THE BRIDGE)

1/4" = 1'-0"

**TIDAL DATA (OCD)**

100-YEAR	+3.62
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MHHW	+0.56
MLLW	-5.88
DESIGN LOW WATER	-6.88
LOWL	-7.95

**GRAPHIC SCALES**



TYPICAL SECTION UNDER BRIDGE

1/4" = 1'-0"



**DESIGN DEVELOPMENT PHASE**

NOT TO BE USED FOR CONSTRUCTION

REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 238-3037 • FAX (510) 238-7237

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	NN/JFJ	DR	AB	CHECK	DT/JFJ
JOB NO.	5465	SUBMITTED BY		DATE	

OAKLAND WATERFRONT TRAIL

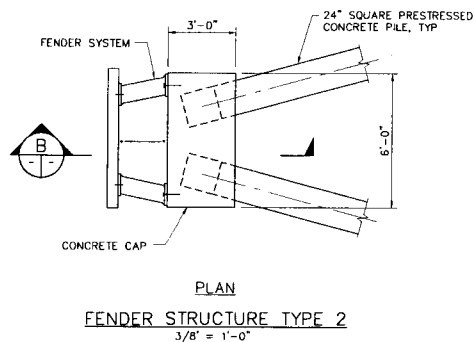
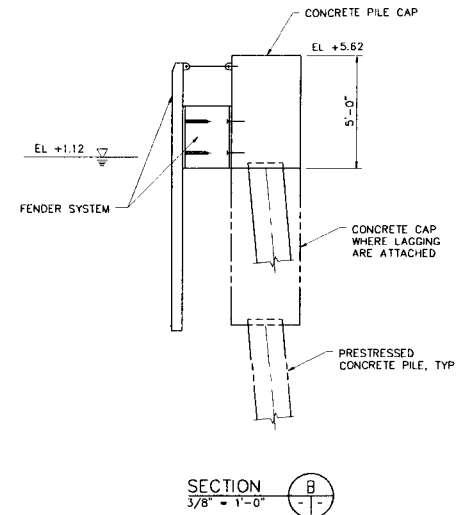
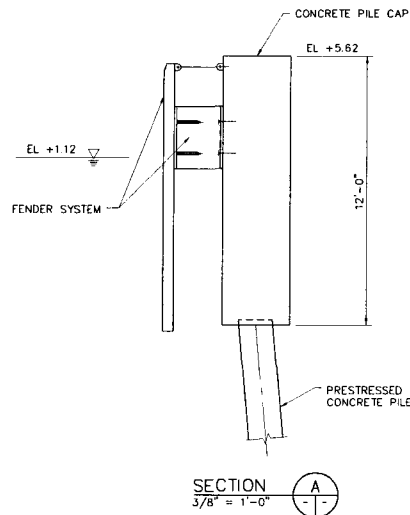
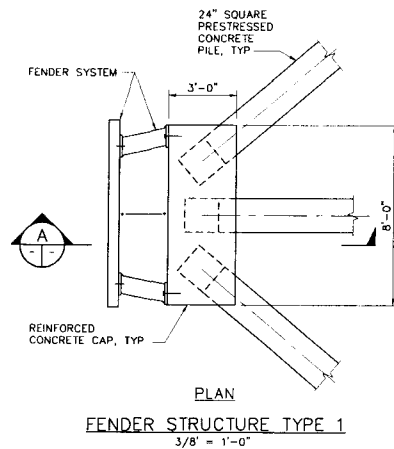
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 5 OF 18

PARK STREET BRIDGE CROSSING  
SECTIONS AND DETAILS

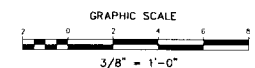
C4



#### NOTES:

1. FENDER SYSTEM SHALL CONSIST OF A FENDER PANEL AND V-TYPE COMPRESSION FENDER UNITS.
2. FENDER STRUCTURE TYPE 1 SHALL BE USED WHERE TIMBER AND MARINE UHMW SHEATHING ARE ATTACHED TO IT. FENDER STRUCTURE TYPE 2 ARE INDEPENDENT UNITS, EXCEPT WHERE FENDER LAGGING ARE ATTACHED TO IT.
3. PILES SHALL HAVE AN EMBEDMENT OF 40 FEET MINIMUM BELOW MUDLINE.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4514 • OAKLAND, CA 94612  
(510) 238-5437 • FAX (510) 238-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	BY	DR	CHK
JJ	AB	DT/JJ	
ASB NO	SUBMITTED BY	TITLE	
5465			

OAKLAND WATERFRONT TRAIL

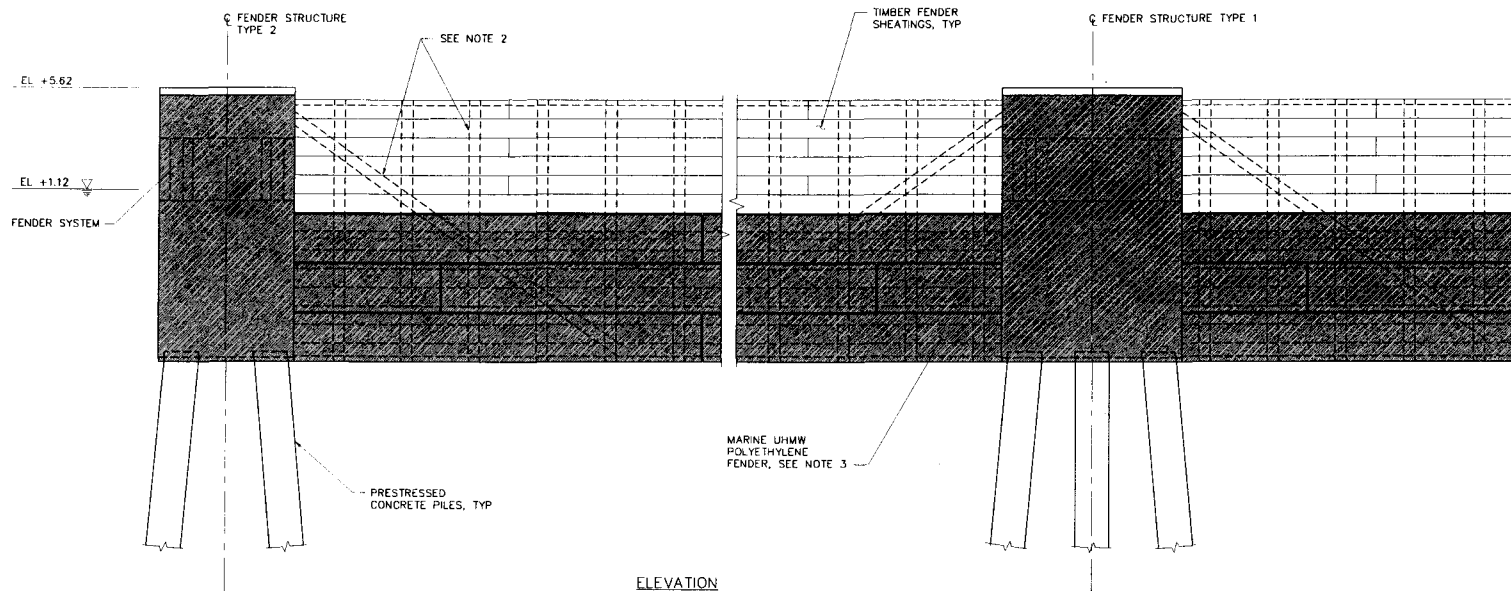
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 6 OF 19

PARK STREET BRIDGE CROSSING  
FENDER SYSTEM DETAIL, SHEET 1

C5

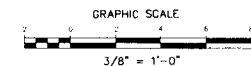


ELEVATION  
FENDER LAGGING  
3/8" = 1'-0"

NOTES:

1. TIMBER FENDER SHEATHING SHALL BE SIMILAR TO EXISTING - 4X10.
2. FRAMING FOR FENDER SHEATHING SHALL CONSIST OF STEEL WIDE FLANGE BEAMS (FOR VERTICALS), BUILT UP CHANNEL, PLATE AND ANGLE FOR TOP & BOTTOM SUPPORT AND ANGLE FOR DIAGONAL MEMBER. FRAMING SHALL BE SIMILAR TO EXISTING. POSITIVE CATHODIC PROTECTION SHALL BE PROVIDED SIMILAR TO EXISTING.
3. THE EXISTING UHMW MARINE FENDER SHALL BE SALVAGED AND REUSED WHENEVER POSSIBLE.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 238-3407 • FAX (510) 238-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	BY	DR	CHK
JJ	AB	D1/JJ	
JOB NO.	SUBMITTED BY	TITLE	
5465			

OAKLAND WATERFRONT TRAIL

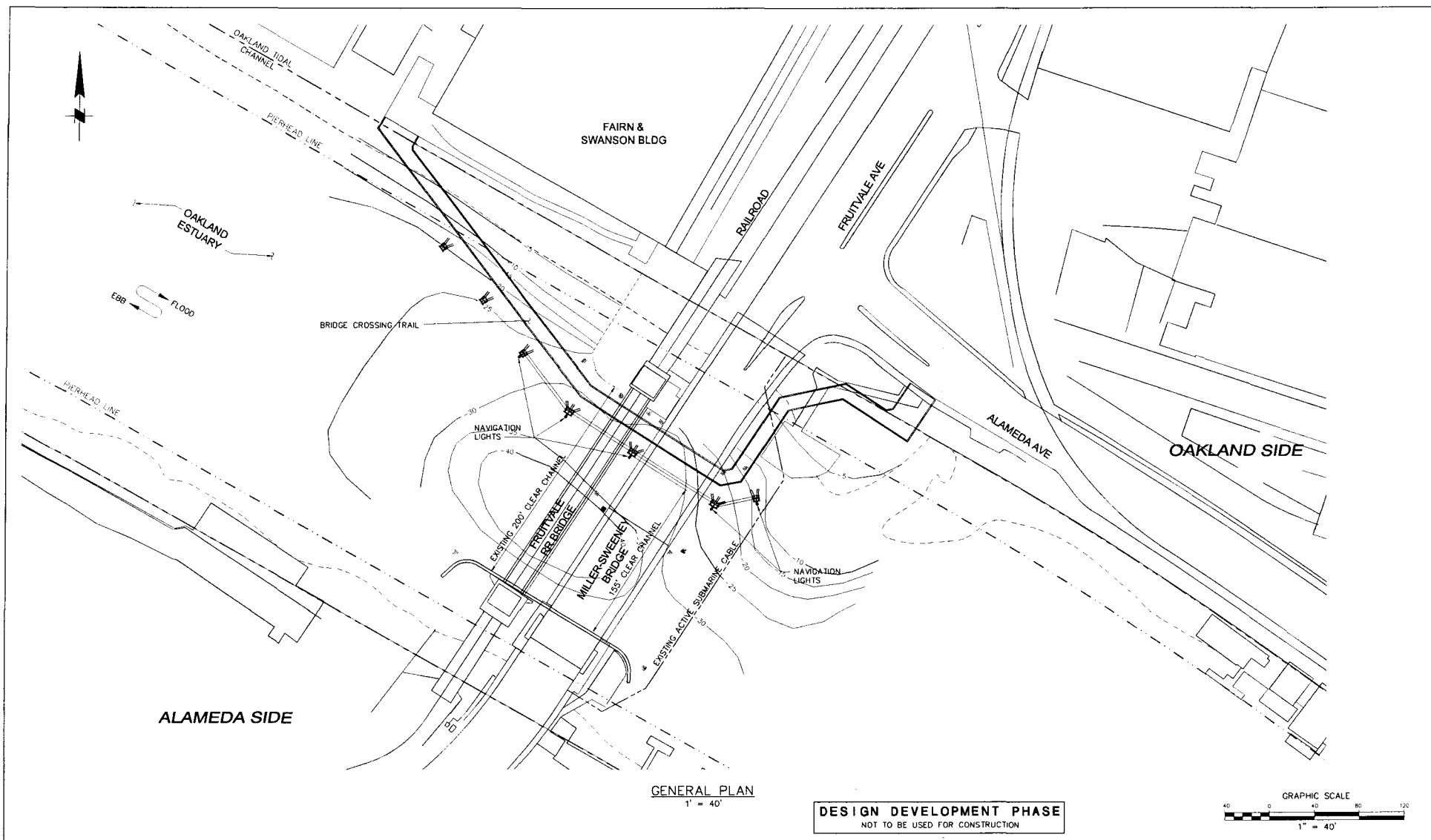
DATE Sep. 1, 2005

BRIDGE CROSSINGS

SHEET 7 OF 19

PARK STREET BRIDGE CROSSING  
FENDER SYSTEM DETAIL, SHEET 2

C6



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK M. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 238-3437 • FAX (510) 238-7227

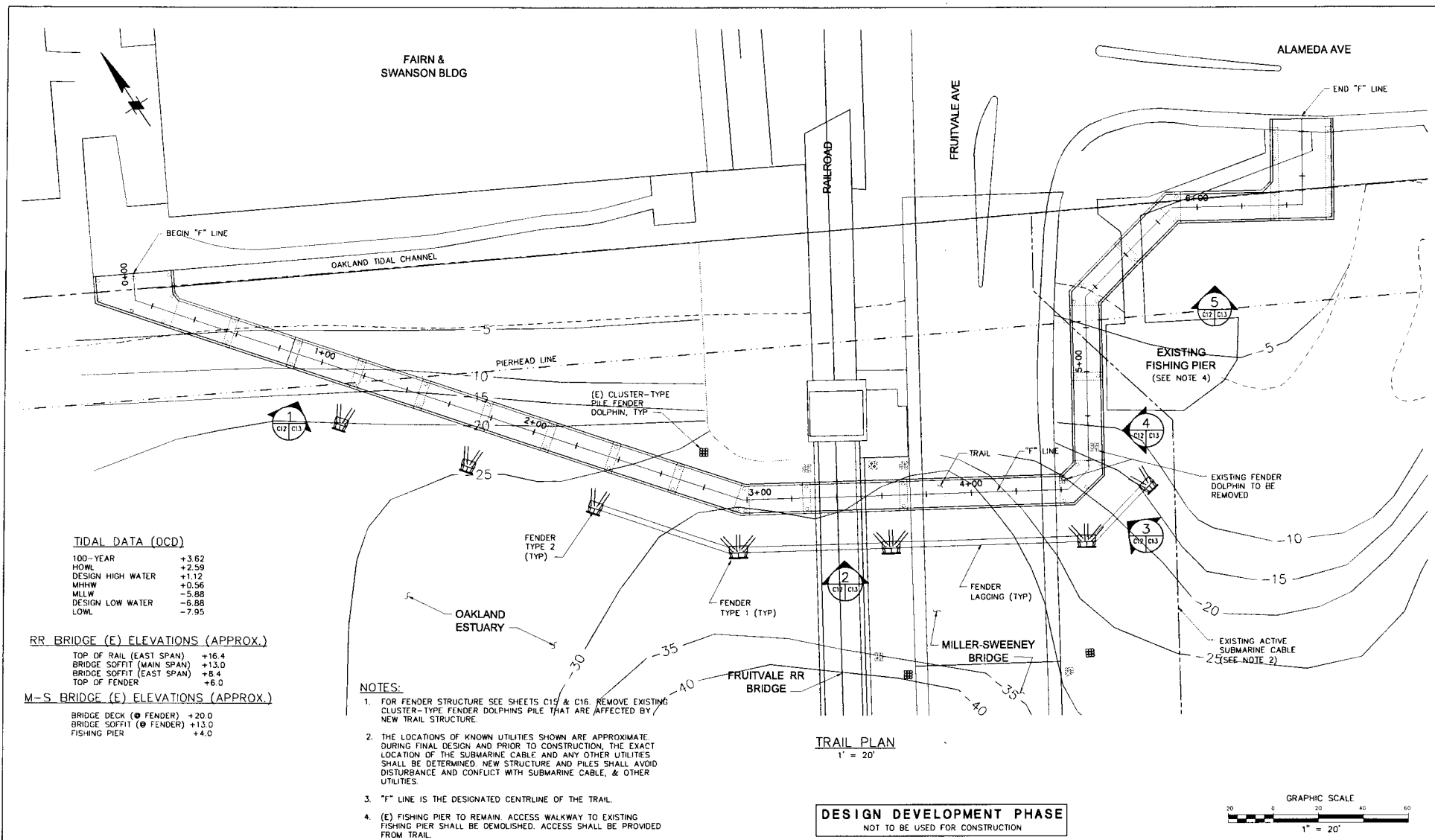
APPROVED \_\_\_\_\_



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Walnut Creek, California 94596  
(925) 944-5411

DSGN	NN/SJ	DR	AB	CHK	DT/SJ
JOB NO.	5465	SUBMITTED BY		TITLE	

OAKLAND WATERFRONT TRAIL	DATE	Sept. 2005
RIDGE CROSSINGS	SHEET	8 OF 19
FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE CROSSING		
<b>GENERAL PLAN</b>		<b>C11</b>



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 238-3437 • FAX (510) 238-7227

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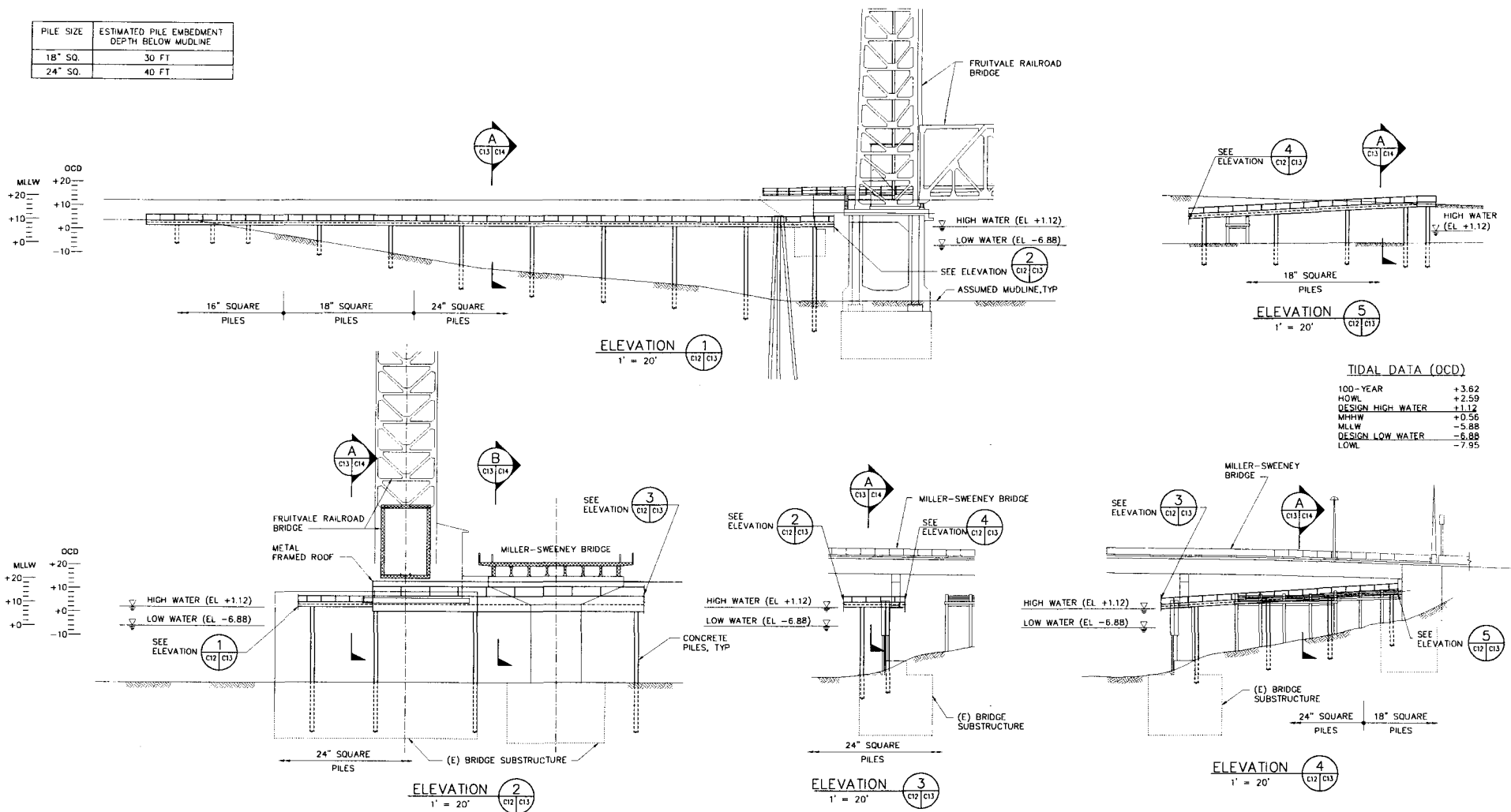


2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DSN	MM/JS	DR	AB	CHE	DT/JS
JOB NO.	5465	SUBMITTED BY		TITLE	

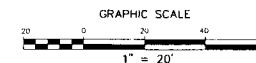
OAKLAND WATERFRONT TRAIL		DATE	Sept. 2005
BRIDGE CROSSINGS		SHEET	9 OF 19
FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE CROSSING		C12	
TRAIL PLAN			

PILE SIZE	ESTIMATED PILE EMBEDMENT DEPTH BELOW MUDLINE
18" SQ.	30 FT
24" SQ.	40 FT



NOTE:  
FENDER SYSTEM NOT SHOWN FOR CLARITY.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OAKMAN PLAZA, SUITE 431A • OAKLAND, CA 94612  
(510) 230-3437 • FAX (510) 230-7257

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

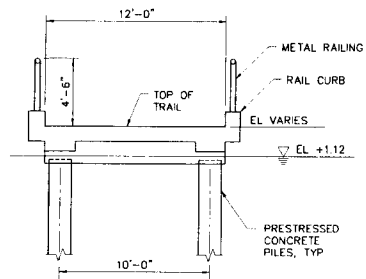
DESIGNER NN/FJ	DATE AB	CHECKED DT/FJ
JOB NO. 5465	SUBMITTED BY	TITLE

OAKLAND WATERFRONT TRAIL  
BRIDGE CROSSINGS  
FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE  
CROSSING  
ELEVATIONS

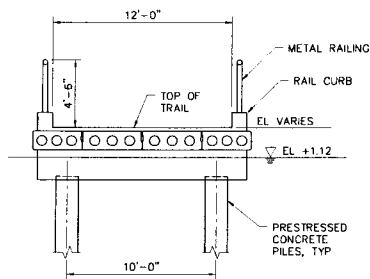
DATE Sept. 2005

SHEET 10 OF 19

C13



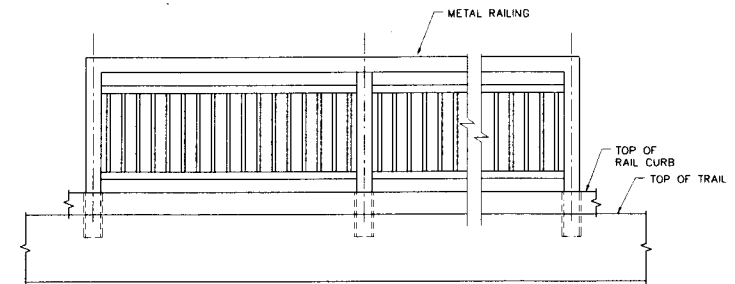
CAST IN PLACE BEAMS  
ALTERNATIVE 1



VOIDS SLAB  
ALTERNATIVE 2

TYPICAL SECTION OPEN AREA

1/4" = 1'-0"

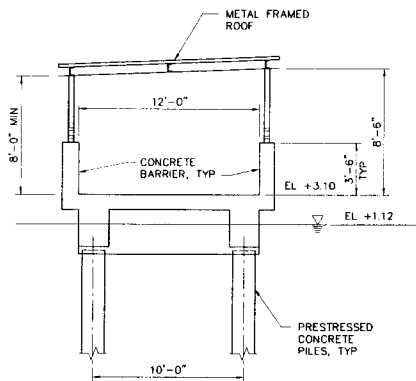


TYPICAL RAILING ELEVATION (OPEN AREA)

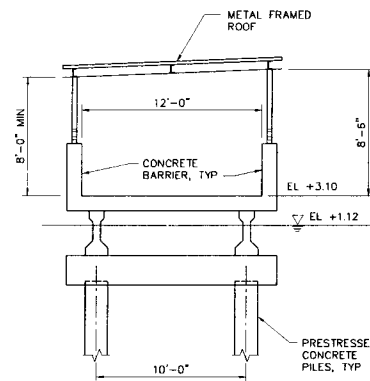
3/4" = 1'-0"

**NOTE:**

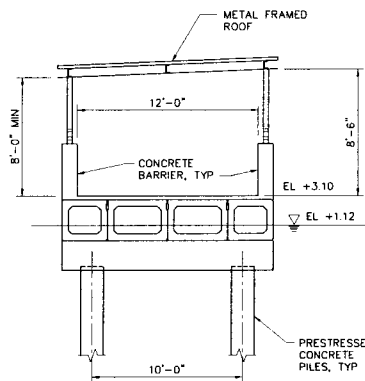
THE FINAL DESIGN SHALL DETERMINE WHICH OF THE ALTERNATIVES SHOWN HERE WILL BE SELECTED FOR THE TRAIL SUPERSTRUCTURE.



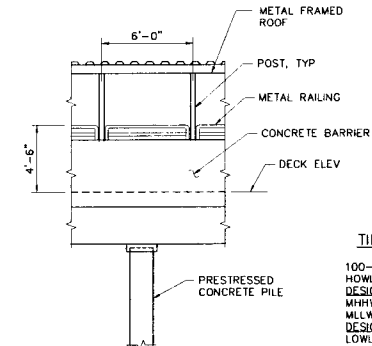
CAST IN PLACE BEAMS  
ALTERNATIVE 1



AASHTO TYPE II PRECAST I-BEAMS  
ALTERNATIVE 2



AASHTO PRECAST BOX-BEAMS  
ALTERNATIVE 3



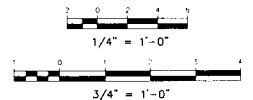
ELEVATION  
(UNDER THE BRIDGE)

1/4" = 1'-0"

**TIDAL DATA (OCD)**

100-YEAR	+3.62
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MHW	+0.56
MLW	-5.88
DESIGN LOW WATER	-6.88
LOW	-7.95

**GRAPHIC SCALES**



**DESIGN DEVELOPMENT PHASE**  
NOT TO BE USED FOR CONSTRUCTION

REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4514 • OAKLAND, CA 94612  
(510) 238-3437 • FAX (510) 238-7237

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	NN/FJ	OR	AB	CHECK	DT/FJ
ACB NO.	5465	SUBMITTED BY		FILE	

OAKLAND WATERFRONT TRAIL

DATE Sept. 2005

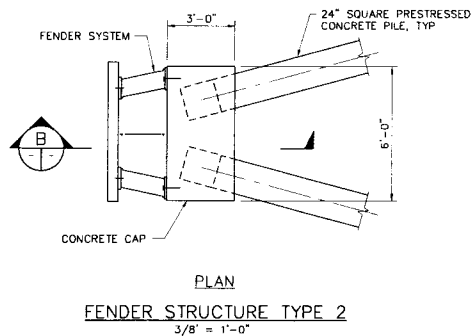
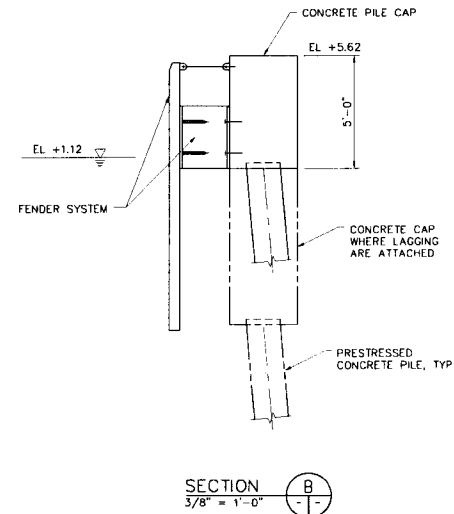
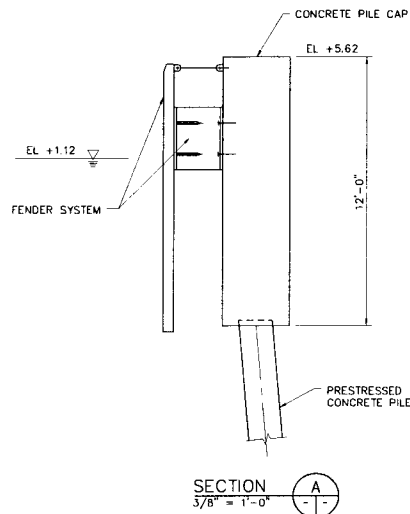
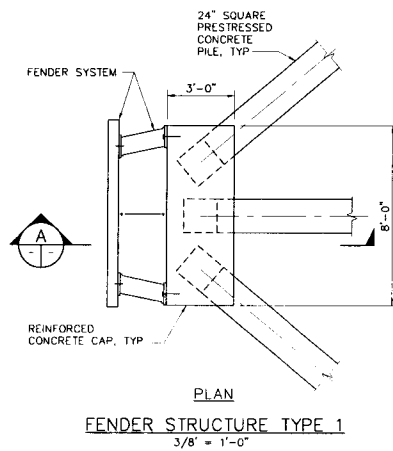
BRIDGE CROSSINGS

SHEET 11 OF 19

FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE  
CROSSING

SECTIONS AND DETAILS

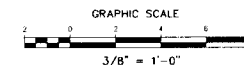
C14



#### NOTES:

- FENDER SYSTEM SHALL CONSIST OF A FENDER PANEL AND V-TYPE COMPRESSION FENDER UNITS.
- FENDER STRUCTURE TYPE 1 SHALL BE USED WHERE TIMBER AND MARINE UHMW SHEATHING ARE ATTACHED TO IT. FENDER STRUCTURE TYPE 2 ARE INDEPENDENT UNITS, EXCEPT WHERE FENDER LAGGING ARE ATTACHED TO IT.
- PILES SHALL HAVE AN EMBEDMENT OF 40 FEET MINIMUM BELOW MUDLINE.

**DESIGN DEVELOPMENT PHASE**  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND CA 94612  
(510) 238-3437 • FAX (510) 238-7227

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2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DSGN	JFJ	DP	AB	CHK	DT/JFJ
JOB NO.	5465	SUBMITTED BY		TITLE	

OAKLAND WATERFRONT TRAIL

DATE Sept. 2005

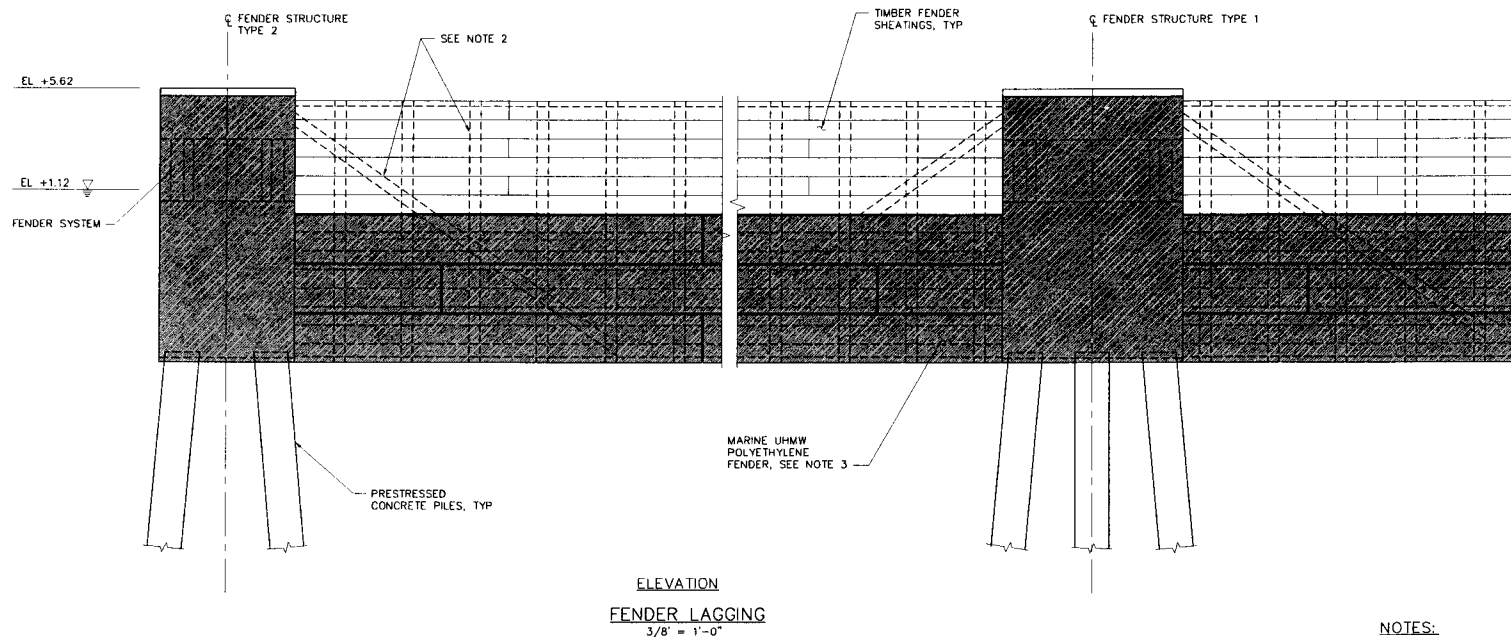
BRIDGE CROSSINGS

SHEET 12 OF 19

FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE  
CROSSING

C15

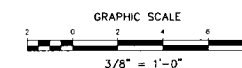
FENDER SYSTEM DETAIL, SHEET 1



# NOTES:

1. TIMBER FENDER SHEATING SHALL BE SIMILAR TO EXISTING - 4X10.
2. FRAMING FOR FENDER SHEATING SHALL CONSIST OF STEEL WIDE FLANGE BEAMS (FOR VERTICALS), BUILT UP CHANNEL, PLATE AND ANGLE FOR TOP & BOTTOM SUPPORT AND ANGLE FOR DIAGONAL MEMBER. FRAMING SHALL BE SIMILAR TO EXISTING. POSITIVE CATHODIC PROTECTION SHALL BE PROVIDED SIMILAR TO EXISTING.
3. THE EXISTING UHMW MARINE FENDER SHALL BE SALVAGED AND REUSED WHENEVER POSSIBLE.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(916) 238-3437 • FAX: (916) 238-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	DR	CHK
NN/JFJ	AB	01/JFJ
JOB NO.	SUBMITTED BY	TITLE
5465		

OAKLAND WATERFRONT TRAIL

DATE Sept. 2005

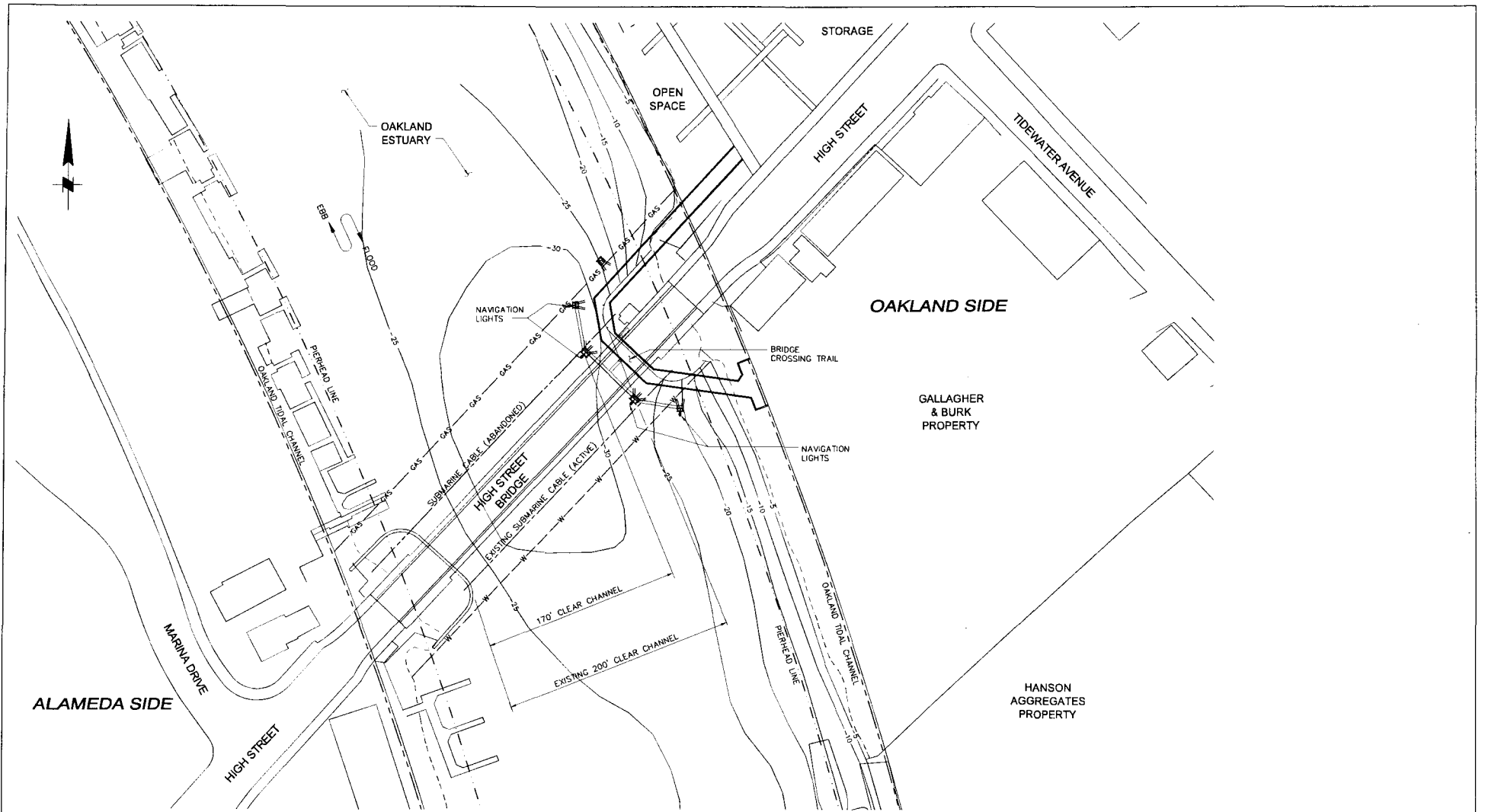
BRIDGE CROSSINGS

SHEET 13 OF 19

FRUITVALE RAILROAD/MILLER-SWEENEY BRIDGE  
CROSSING

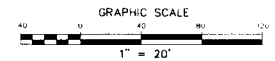
C16

FENDER SYSTEM DETAIL, SHEET 2



GENERAL PLAN  
1" = 40'

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 238-3437 • FAX (510) 238-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	NN/FJ	DATE	AB	CHECK	DT/FJ
JOB NO.	5465	SUBMITTED BY		TITLE	

OAKLAND WATERFRONT TRAIL

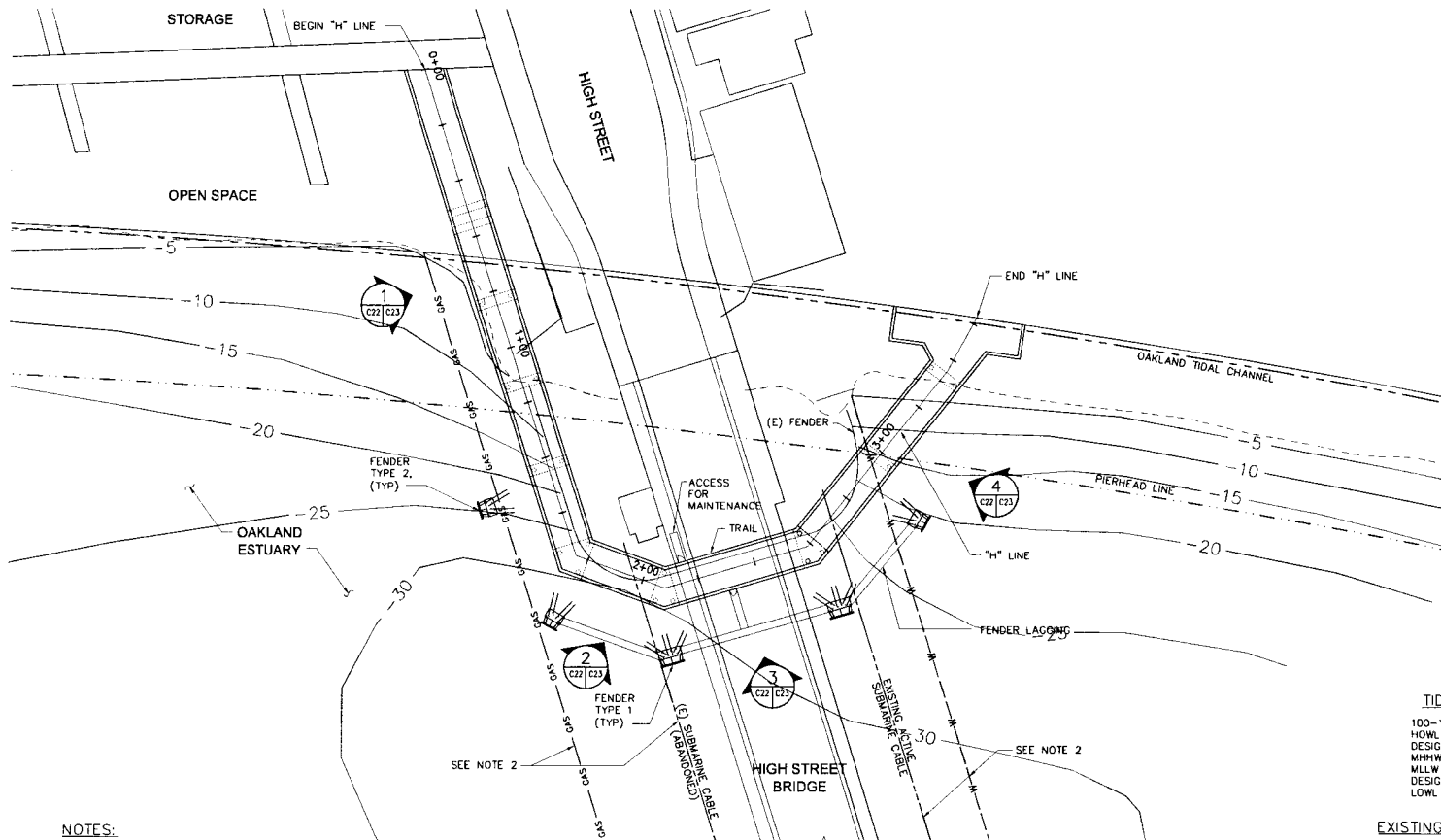
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 14 OF 19

HIGH STREET BRIDGE CROSSING  
GENERAL PLAN

C21



#### NOTES:

1. FOR FENDER STRUCTURE SEE SHEETS C25 & C26. EXISTING FENDER TO BE REMOVED.
2. THE LOCATIONS OF KNOWN UTILITIES SHOWN ARE APPROXIMATE. DURING FINAL DESIGN AND PRIOR TO CONSTRUCTION, THE EXACT LOCATION OF THE SUBMARINE CABLE AND ANY OTHER UTILITIES SHALL BE DETERMINED. NEW STRUCTURE AND PILES SHALL AVOID DISTURBANCE AND CONFLICT WITH SUBMARINE CABLE, & OTHER UTILITIES.
3. "H" LINE IS THE DESIGNATED CENTRLINE OF THE TRAIL.

#### TRAIL PLAN

1" = 20'

#### TIDAL DATA (OCD)

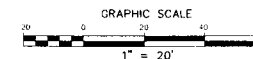
100-YEAR	+3.52
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MHHW	+0.56
MLLW	-5.88
DESIGN LOW WATER	-6.88
LOWL	-7.95

#### EXISTING ELEVATIONS (APPROX.)

BRIDGE DECK (● FENDER)	+15.6
BRIDGE SOFFIT (● FENDER)	+12.6
CATWALK	+6.3
TOP OF FENDER	+6.8

#### DESIGN DEVELOPMENT PHASE

NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4114 • OAKLAND, CA 94612  
(510) 238-3431 • FAX (510) 238-7227

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Walnut Creek, California 94596  
(925) 944-5411

DESIGN	NR/SJ	DR	AB	CHK	DT/SJ
JOB NO.	5465	SUBMITTED BY		DATE	

OAKLAND WATERFRONT TRAIL

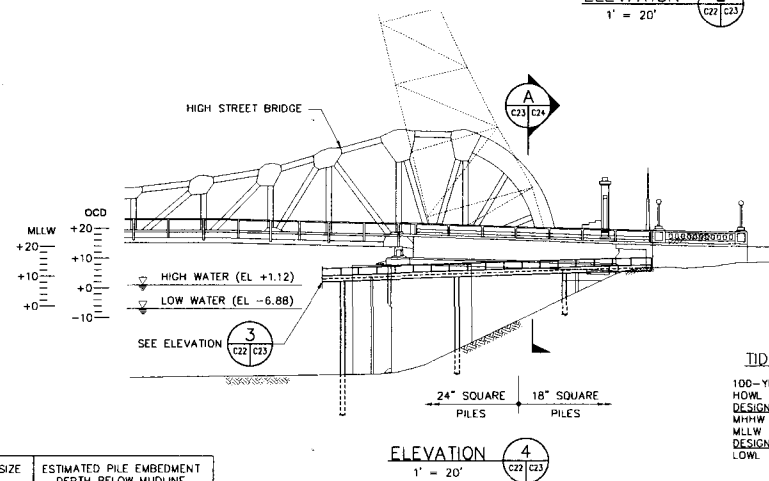
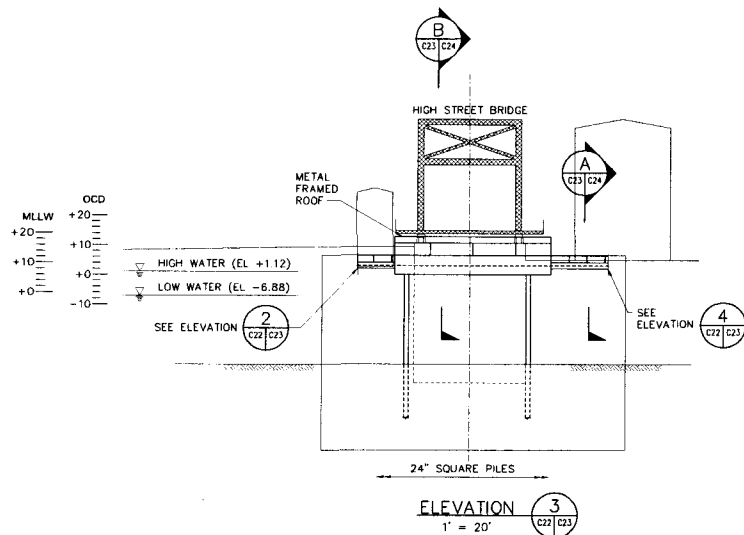
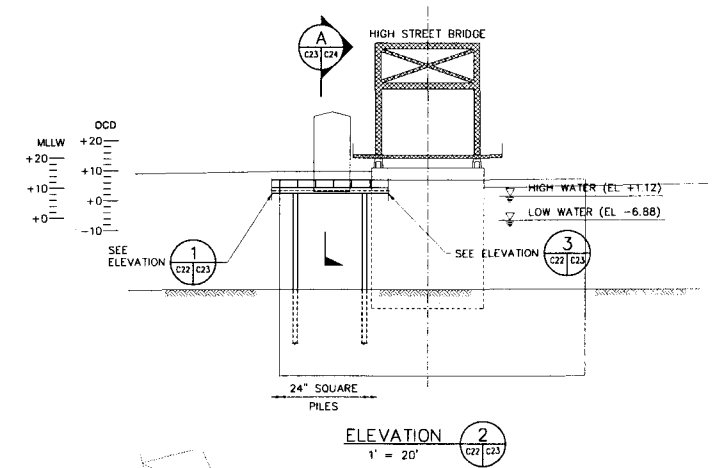
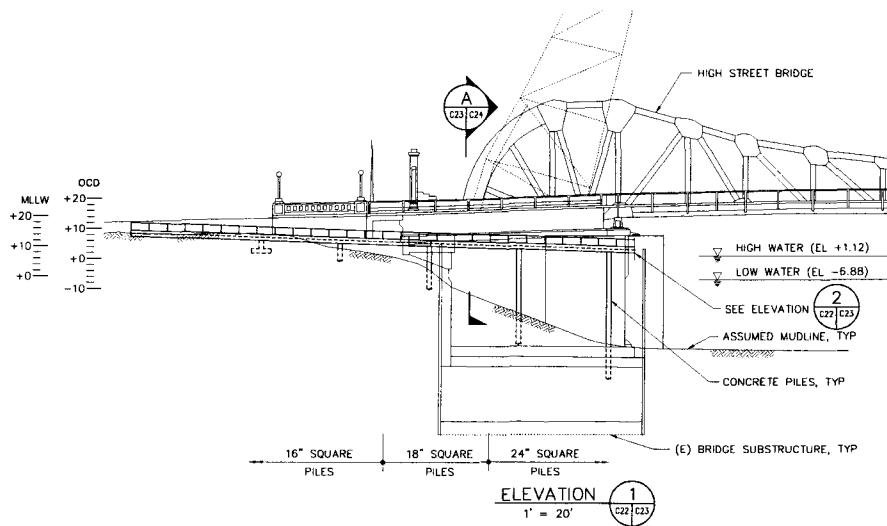
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 15 OF 19

HIGH STREET BRIDGE CROSSING  
TRAIL PLAN

C22



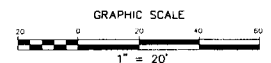
PILE SIZE	ESTIMATED PILE EMBEDMENT DEPTH BELOW MUDLINE
18" SQ.	30 FT
24" SQ.	40 FT

NOTE:  
FENDER SYSTEM NOT SHOWN FOR CLARITY.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION

TIDAL DATA (OCD)

100-YEAR	+3.62
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MHHW	+0.56
MLLW	-5.88
DESIGN LOW WATER	-6.88
LOWL	-7.95



REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OAKAWA PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 338-3437 • FAX (510) 338-7227

APPROVED \_\_\_\_\_



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Walnut Creek, California 94596  
(925) 944-5411

DSGN	NN/FJ	DR	AB	TYP	DT/FJ
JOB NO.	5465	SUBMITTED BY		FILE	

OAKLAND WATERFRONT TRAIL

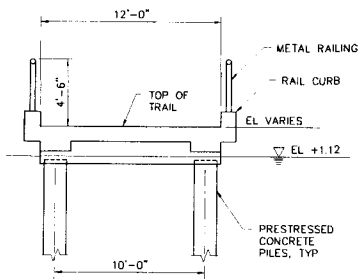
DATE Sept. 2005

BRIDGE CROSSINGS

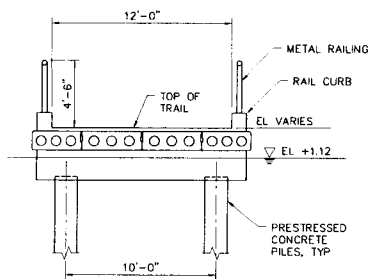
SHEET 16 OF 19

HIGH STREET BRIDGE CROSSING  
ELEVATIONS

C23



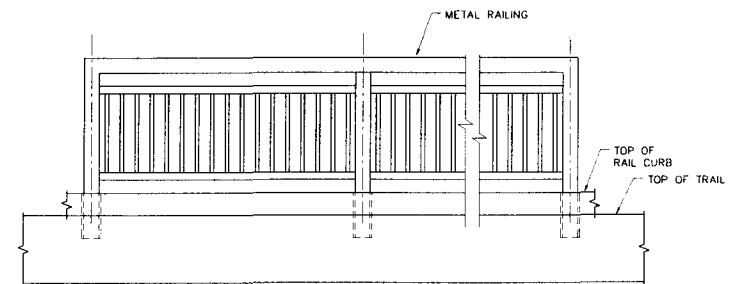
CAST IN PLACE BEAMS  
ALTERNATIVE 1



VOIDED SLAB  
ALTERNATIVE 2

TYPICAL SECTION OPEN AREA

1/4" = 1'-0"

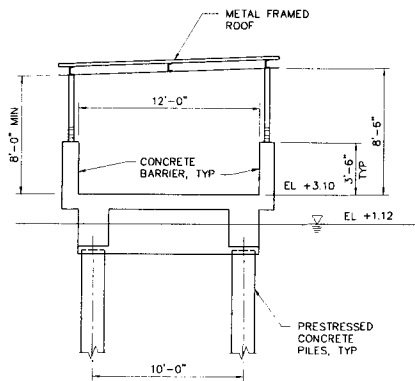


TYPICAL RAILING ELEVATION (OPEN AREA)

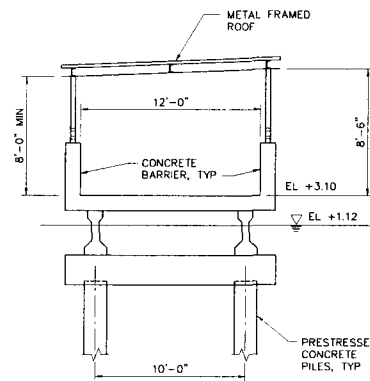
3/4" = 1'-0"

**NOTE:**

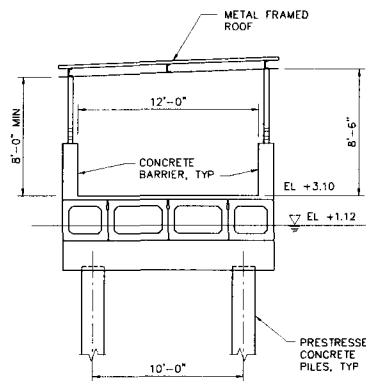
THE FINAL DESIGN SHALL DETERMINE WHICH OF THE ALTERNATIVES SHOWN HERE WILL BE SELECTED FOR THE TRAIL SUPERSTRUCTURE.



CAST IN PLACE BEAMS  
ALTERNATIVE 1



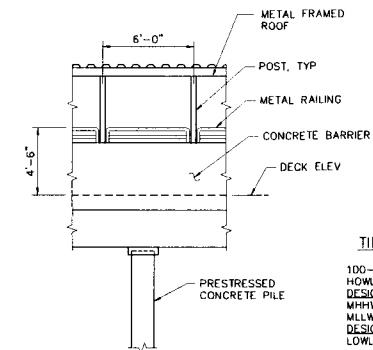
AASHTO TYPE II, PRECAST I-BEAMS  
ALTERNATIVE 2



AASHTO PRECAST BOX-BEAMS  
ALTERNATIVE 3

TYPICAL SECTION UNDER BRIDGE

1/4" = 1'-0"



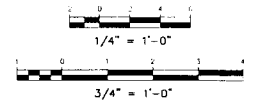
ELEVATION  
(UNDER THE BRIDGE)

1/4" = 1'-0"

**TIDAL DATA (OCD)**

100-YEAR	+3.62
HOWL	+2.59
DESIGN HIGH WATER	+1.12
MHHW	+0.56
MLLW	-5.88
DESIGN LOW WATER	-6.88
LOW	-7.95

**GRAPHIC SCALES**



**DESIGN DEVELOPMENT PHASE**  
NOT TO BE USED FOR CONSTRUCTION

REVISION	DESCRIPTION	BY	DATE



**CITY OF OAKLAND**  
DESIGN AND CONSTRUCTION SERVICES DEPARTMENT  
250 FRANK H. OGDEN PLAZA, SUITE 4314 • OAKLAND, CA 94612  
(510) 234-5437 • FAX: (510) 234-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	NN/FJ	DR	AB	CHEK	D1/FJ
JOB NO.	5465	SUBMITTED BY		TITLE	

**OAKLAND WATERFRONT TRAIL**

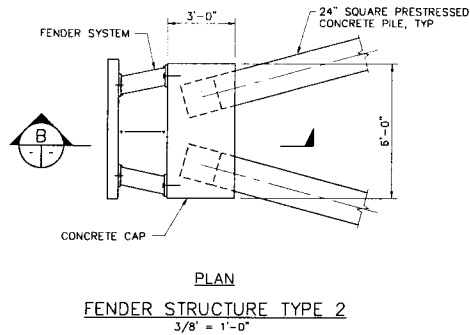
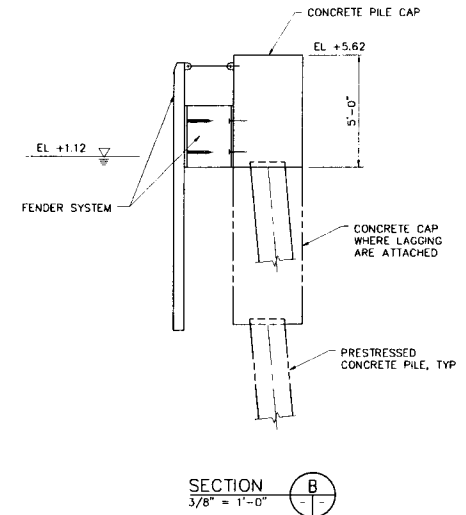
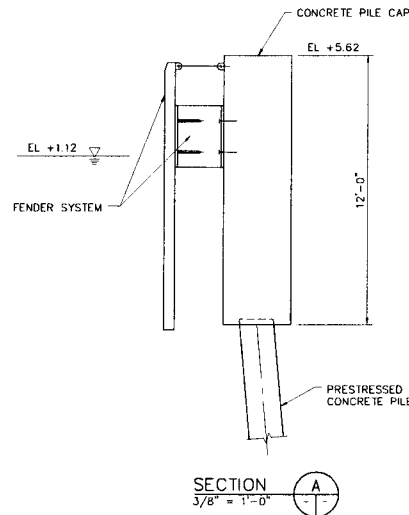
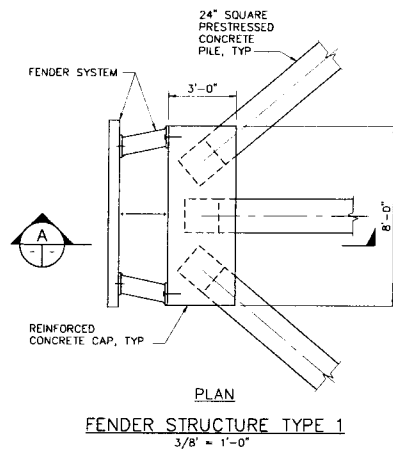
DATE Sept. 2005

**BRIDGE CROSSINGS**

SHEET 17 OF 19

**HIGH STREET BRIDGE CROSSING  
SECTIONS AND DETAILS**

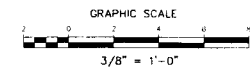
C24



#### NOTES:

1. FENDER SYSTEM SHALL CONSIST OF A FENDER PANEL AND V-TYPE COMPRESSION FENDER UNITS.
2. FENDER STRUCTURE TYPE 1 SHALL BE USED WHERE TIMBER AND MARINE UHMW SHEATHING ARE ATTACHED TO IT. FENDER STRUCTURE TYPE 2 ARE INDEPENDENT UNITS, EXCEPT WHERE FENDER LAGGING ARE ATTACHED TO IT.
3. PILES SHALL HAVE AN EMBEDMENT OF 40 FEET MINIMUM BELOW MUDLINE.

DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION



REVISION	DESCRIPTION	BY	DATE



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(510) 238-3437 • FAX: (510) 238-7227

APPROVED \_\_\_\_\_



2001 N. Main Street, Suite 360  
Walnut Creek, California 94596  
(925) 944-5411

DESIGN	BY	DR	CHK
JFJ	AB	D1/JFJ	
JOB NO.	SUBMITTED BY	TITLE	
5465			

OAKLAND WATERFRONT TRAIL

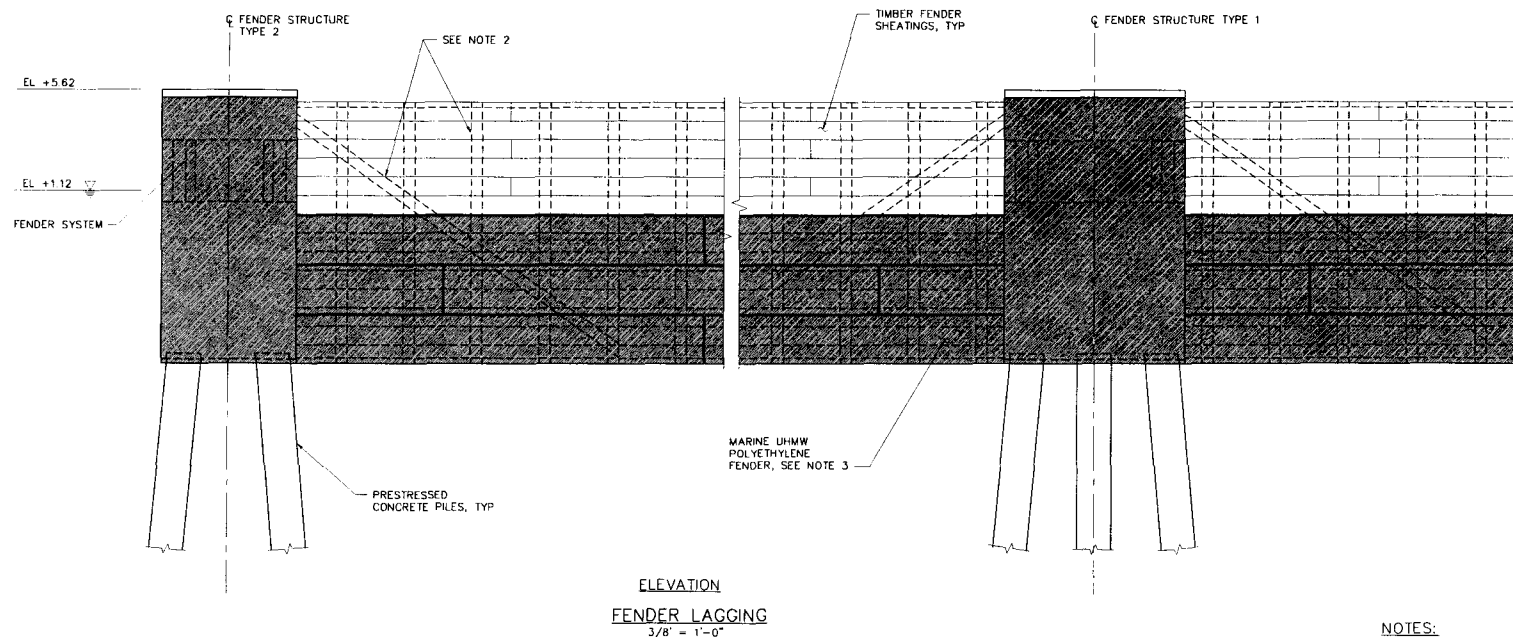
DATE Sept. 2005

BRIDGE CROSSINGS

SHEET 18 OF 19

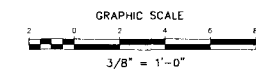
HIGH STREET BRIDGE CROSSING  
FENDER SYSTEM DETAIL, SHEET 1

C25



# NOTES:

1. TIMBER FENDER SHEATING SHALL BE SIMILAR TO EXISTING - 4X10.
2. FRAMING FOR FENDER SHEATING SHALL CONSIST OF STEEL WIDE FLANGE BEAMS (FOR VERTICALS), BUILT UP CHANNEL, PLATE AND ANGLE FOR TOP & BOTTOM SUPPORT AND ANGLE FOR DIAGONAL MEMBER. FRAMING SHALL BE SIMILAR TO EXISTING. POSITIVE CATHODIC PROTECTION SHALL BE PROVIDED SIMILAR TO EXISTING.
3. THE EXISTING UHMW MARINE FENDER SHALL BE SALVAGED AND REUSED WHENEVER POSSIBLE.



DESIGN DEVELOPMENT PHASE  
NOT TO BE USED FOR CONSTRUCTION

REVISION	DESCRIPTION	BY	DATE



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DESIGN	DR	DT/JSJ
MM/JSJ	AB	DT/JSJ
JOB NO.	SUBMITTED BY	TITLE
5465		

OAKLAND WATERFRONT TRAIL

DATE: Sep1, 2005

BRIDGE CROSSINGS

SHEET 19 OF 19

HIGH STREET BRIDGE CROSSING  
FENDER SYSTEM DETAIL, SHEET 2

C26